1937.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

REPORT

OF THE

DIRECTOR-GENERAL OF PUBLIC HEALTH,

NEW SOUTH WALES,

FOR THE YEAR 1936.

PRESENTED BY THE MINISTER FOR PUBLIC HEALTH
(THE HON. HERBERT PATON FITZSIMONS, M.L.A.)

Ordered by the Legislative Assembly to be printed, 13 *December*, 1937.

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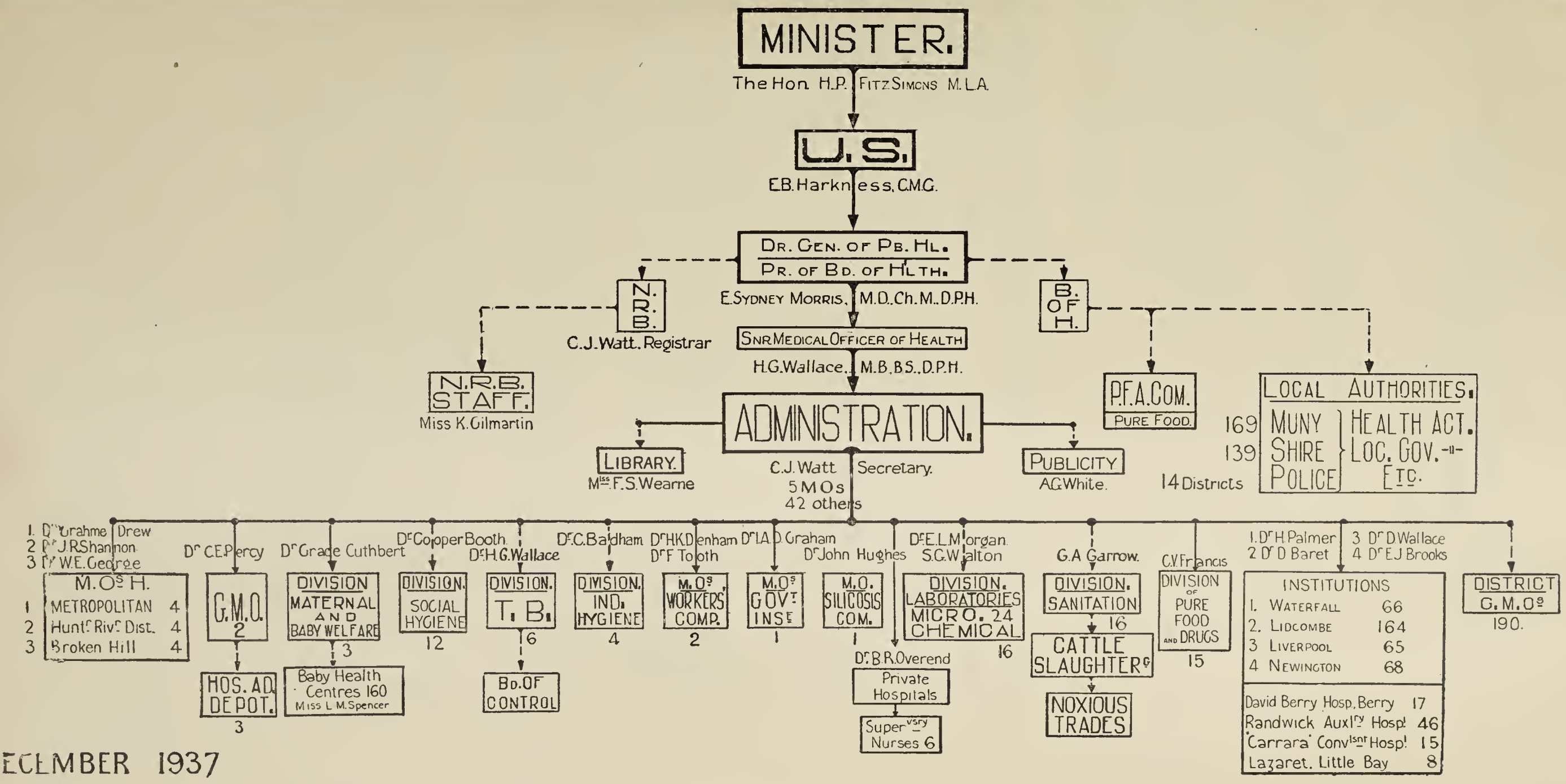
HEALTH DEPARTMENT.

OFFICE OF THE DIRECTOR GENERAL OF PUBLIC HEALTH.



DECEMBER 1937

Office of the Director-General of Public Health, 93 Macquarie-street and 52 Bridge-street, Sydney.

Members of the State Board of Health, 1936.

E. Sydney Morris, M.D., Ch.M., D.P.H. (President).

Cecil Purser, M.B., Ch.M.	Member, Board of Health.	
R. J. Hawkes (President, Chamber of Commerce)	do	do
William George Armstrong, M.B., D.P.H.	do	do
The Hon. Frank Edgar Wall, M.D., M.L.C.	do	do
Robert Dick, M.B., Ch.M., D.P.H.	do	do
Hon. A. Howie, Lord Mayor of Sydney	do	do
B. G. Littler, Esq.	do	do
Mrs. Euphemia Jean Maineke	do	do

Administrative Staff,

Director-General of Public Health and Commissioner for Venereal Diseases: E. Sydney Morris, M.D., Ch.M., D.P.H.

Senior Medical Officer of Health and Director of Tuberculosis: Hugh Gilmour Wallace, M.B., B.S., D.P.H.

Metropolitan Medical Officer of Health: John Grahame Drew, M.B., B.Ch., M.R.C.S., L.R.C.P., D.P.H., D.T.M., D.T.H.

Director of Maternal and Baby Welfare: Elma Sandford Morgan, M.B., Ch.M.

Assistant Medical Officer of Health: Bruce Robson Overend, M.B., Ch.M., D.P.H., D.T.M., D.T.H.

Secretary: Cecil James Watt.

Divisions and Branches.

The following Divisions are controlled by the Director-General of Public Health:—Maternal and Baby Welfare; Tuberculosis; Venereal Diseases; Industrial Hygiene; Government Medical Officers for Sydney; Medical Officers of Health, Metropolitan, Newcastle and Broken Hill Districts; Microbiological Laboratories, Sydney and Broken Hill; Chemical Laboratory; Pure Food; Cattle Slaughtering; Sanitation; Publicity, etc.

The Hospital Division comprises The Prince Henry (formerly Coast) Hospital, to 31st July, 1936; The David Berry Hospital, four State Hospitals and Homes, Waterfall Sanatorium (Tuberculosis), Strickland Convalescent Hospital, and the Leper Lazaret.

Legislative Enactments.

The Minister for Health is charged with the administration of the following Acts, for promotion of the Public health, execution of which is left to the Director General of Public Health and the staff working under his control:—Cattle Slaughtering and Diseased Animals and Meat Acts, 1902–1932; Food Preservation by Sulphur Dioxide Enabling Act, 1920; Noxious Trades Act, 1902; Private Hospitals Act, 1908; Public Health Acts, 1902–1932; Pure Food Act, 1908; Wine Adulteration Act, 1902. Burials in closed cemeteries and the exhumation of bodies for the purpose of re-interment, etc., are also dealt with.

CONTENTS.

Report of the Director-General of Public Health to the Honourable the Minister for Health (The Hon. H. P. FitzSimons, M.L.A.)

Sir,

I have the honour to present herewith the report on the work of this office for the year 1936.

In spite of many difficulties inseparable from a period of necessary economy, it has been possible not only to hold established gains, but also to make some little progress in certain directions.

Though there will always be room for improvement it may be safely maintained that during the year under review, the state of the public health was, in general, satisfactory.

VITAL STATISTICS.

An extract is appended (page 11) from the Report of the Government Statistician on the Vital Statistics for the year 1936.

Population.—The population of New South Wales at 31st December, 1936, was 2,681,736 (males 1,355,493; females 1,326,243; a proportion of 102 males to 100 females). The increase of population for the year was 24,070 (0·91 per cent.); 2,253 by excess of arrivals over departures; and 21,817 by excess of births over deaths.

Births.—Total *live* births numbered 46,193, or a rate of 17·31 per 1,000 of population, this rate was 0·12 per cent. above the average of the previous five years. Stillbirths (which are now registrable under an amendment in 1934 of the Births, Deaths and Marriages Act) numbered 1,419 or 2·98 per cent. of all births—live and still—registered.

Deaths.—There were 24,376 deaths, equivalent to a rate of 9·14 per 1,000 of the population. The rate in the metropolitan area was 9·88 and in the remainder of the State 8·48 per 1,000.

Infant Mortality.—There were 2,008 deaths of children under 1 year of age, equal to a rate of 43·47 per 1,000 live births. The infantile mortality rate was 3·62 above the average of the previous five years. The Director of Maternal and Baby Welfare in her Report (page 37) states that it is difficult to account for the increase in the rate, as there was no particularly severe epidemic in 1936 affecting infants under one year. An analysis of the specified causes of deaths showed the rise to be principally among the group classified as "prematurity"—674 of the deaths (or more than one-third) being certified as due to this cause.

INFECTIOUS DISEASES (p. 48).

Diphtheria.—During 1936 diphtheria was unusually prevalent, particularly during the first half of the year. Of the 7,064 notified cases, 5,000 occurred between January and June, and were almost equally distributed between the metropolitan area and the country districts. There were 220 deaths, of which 133 (or 60.45 per cent.) were of children under 5 years of age, and 87 (39·55 per cent.) were aged 5 years or over. Of the 7,064 notified cases, 2,057 children (or 29·12 per cent.) were under 5 years, and 5,007 (70·88 per cent.) were aged 5 years or over. These figures show that although the incidence is much lighter under 5 years of age, the death rate under 5 years is considerably heavier.

Progress of Immunisation.—From May onwards there was an active campaign directing attention to the advantages and safety of immunisation; and the department sought the co-operation of the 311 municipal and shire Local Authorities for the carrying out in their districts of a scheme of immunisation. Departmental medical officers were made available to address meetings arranged by Councils; all anatoxin used at the depots was paid for by the department, which also supplied all forms, etc., required, and assisted generally with publicity.

On the whole there has been a reasonably good response, and the department is hopeful that it may attain its objective of securing the immunisation of 100,000 children in the first twelve months of its active campaign (*i.e.*, from 1st June, 1936, to 30th June, 1937). It was estimated that at 31st December, 1936, some 43,300 children had been immunised, either privately or at public depots, namely :—

No. of children immunised to 31st December, 1936—

At the Departmental Depot, 52 Bridge-street, Sydney	1,300
Under a scheme of co-operation with Municipal and Shire Councils	30,000
Privately treated by family doctor	12,000
	43,300

Scarlet Fever showed signs of increasing prevalence, 3,939 notifications were received in 1936, compared with 2,250 in 1935, and 2,166 in 1934. There were 26 deaths in 1936.

Typhoid Fever.—Notified cases numbered 132, or 9 less than in 1934 (141 cases); this is the lowest number recorded in any year since the disease was made notifiable in 1898. Of the 132 cases, 53 were notified from the metropolitan area; 8 from the Hunter River District, and 8 from Broken Hill; the remaining 63 cases were from other country districts. The four small outbreaks that occurred appeared on investigation to have been spread by household contact from a first case. In no instance, so far as could be ascertained, was any outbreak associated with a "carrier."

Possibly as a result of the increasing rarity at hospitals or in general practice of typhoid fever patients, our cases were not diagnosed until after the patients' death, or the illness had continued for several weeks.

Infantile Paralysis.—Twenty-three cases were notified in 1936; 12 of the notifications were received in the period January–June; and 11 between the end of August and 31st December; 6 of the cases were notified from Hay during October–November.

Typhus Fever.—Four cases of endemic typhus were notified in 1936, of which 3 (1 male and 2 females) occurred in the metropolitan area; and 1 male case was reported from a North Coast district in which cases have previously been reported.

Undulant Fever.—A blood specimen recently examined in connection with 2 cases of illness in children on a North Coast dairy gave a position agglutination reaction with both *B. melitensis* and *B. abortus.*

Leprosy.—On 31st December, 1936, 16 persons (13 males and 3 females) were under detention in the Lazaret at Little Bay.

Survey of Contacts.—During the year a medical examination was made of members of three North Coast families in which cases of leprosy have occurred over a period of at least thirty years; 56 persons were interviewed during the investigation.

TUBERCULOSIS DIVISION.

The Director of the Division reports (page 72) that 1,372 notifications of tuberculosis were received in 1936, approximately 200 less than in 1935, when 1,572 cases were notified. The deaths numbered 955, or 16 more than in 1935 (939).

With the object of early detection of infection in familial contacts (as well as actual household contacts) brothers, sisters, and descendants are communicated with by the Director of the Division and advised to have a radiological examination. Excellent results are being obtained from a card index system which enables the Division to notify contacts (particularly those whose ages range from 15 to 25 years) shortly before each birthday of the arrangements made for their re-examination. The Red Cross Society is also assisting the department by arranging through the Society's Country branches for radiologieal examination of contacts residing in country districts.

Until recently the Division has had practically to treat only persons in whom the disease was so far advanced or so extensively acute that there was little prospect of their recovery. It has been recently concentrating on search for early cases among persons known or suspected to have been exposed to infection, in the belief that by such action the incidence of tubcreulosis will in a few years be materially lessened.

Investigation into the After-Histories of 686 *Patients Admitted in* 1931 *to Sanatoria in New South Wales* (*page* 77).—Enquiries made into the after-histories of 686 patients (468 males and 218 females) admitted to New South Wales Sanatoria in 1931 diselosed that 50·7 per cent., or slightly more than half, had died.

Comprehensive proposals of the Board of Control of the Campaign against Tuberculosis were submitted in 1936. Among the more important of the needs towards a more definite control over pulmonary tuberculosis in this State are :—

(i) Provision of four additional dispensaries in the Metropolitan area, situated respectively at Parramatta, and in the mid-western, southern and northern groups of suburbs. These dispensaries should be established at an existing public hospital in co-operation with the Hospitals Commission.
(ii) Appointment of four additional visiting nurses in order that known cases of tuberculosis and contacts may be kept under more frequent supervision than is possible with the present limited staff of five nurses.
(iii) Provision at the Randwick Auxiliary Hospital of two additional wards for thirty beds each for male and female advanced cases, an additional ward for females being a matter of great urgency.
(iv) Provision at one of the State Hospitals and Homes of dormitory accommodation of about twenty beds for old chronic male cases, who now occupy beds at the Waterfall Sanatorium that should be used for the earlier curable type of case.

Reference is made in the Report (page 165) of the Medical Superintendent of Waterfall Sanatorium to the difficulties experienced in treating this type of patient under Sanatorium conditions, and it is important that provision should be made for them elsewhere.

Great difficulty has been experienced during the year in providing accommodation for tuberculosis cases, espceially those in the more advanced stages of the disease.

The number of beds available at Randwick Auxiliary Hospital for advanced cases is inadequate to meet the demand, so that it is far too frequently necessary to admit unsuitable types of patients to Waterfall Sanatorium. This is undesirable and the practice will be discontinued as soon as adequate accommodation is available at Randwick.

Such additional accommodation has been urgently needed for some considerable time and until provided there must be, periodically, overcrowding of both male and female wards at Waterfall.

DIVISION OF VENEREAL DISEASES (p. 67).

Notified cases of venereal disease in 1936 numbered, 5,160, an increase of 331 over those received (4,829) in 1935. Of the total notifications, 1,060 were for syphilis (males 744, and females 316—a sex ratio of 2·35 males to 1 female), and 3,737 notifications were for gonorrhœa (males 3,120, and females 617—a sex ratio of 5·06 males to 1 female).

The Director of the Division states that there has been a decrease in the number of persons reporting with a primary syphilitic infection, and that this is in keeping with observations in many other countries. The majority of the notifications received for syphilis refer to infections which have been present for some years before discovery, and in many instances the patient has been quite unaware of the fact that he was infected. It is known from routine tests for syphilis at the Departmental Clinic that some infeetions have passed unnoticed by the patient, for among those who have attended for treatment of a gonoeoeeal infection, 1·1 per eent. of unsuspected syphilitic infections were found in 1936; in 1935 the figure was 1·8 per cent. Most of the patients who attend at the Clinie for treatment of syphilis have either a history of infection several years prior to attendanee, or eannot give any information which might help to date the infeetion.

In males, 6·8 per cent. of the new registrations during 1936, suffering from syphilis, were aged 20 years and under, and 12·5 per cent. were aged 25 years and under. Females infected with syphilis are detected earlier, and 15·8 per cent. of their notifications during 1936 were for those aged 20 years and under, and 29·7 per cent. for those aged 25 years and under.

Notifications of gonorrhœa increased during the year by 17·2 per 100,000 of population compared with 1935, and showed the highest incidence since 1930. Gonorrhœa is essentially a disease of youth and of the years of young manhood and young womanhood. In males, 14·1 per cent. of the notifications were for those aged 20 years and under, and 42·24 per cent. for those aged 25 years and under. In females, 35 per cent. of the notifications for gonorrhœa were for those aged 20 years and under, and 60·3 per cent. for those aged 25 years and under.

Prophylaxis was used by 999 persons; of these, only 200 had associated with a prostitute prior to seeking protection. The Director of the Division states that investigations indicate that the prostitute is not the chief source of infection in Sydney, and that it is doubtful if she is responsible for even one-third of the infections. The "amateur" in his opinion is the greater problem, and he states that promiscuous sexual intercourse between men and women in similar spheres of life or meeting under similar social conditions appears to have increased with the improvement in contraceptive methods. He points out that infection is not merely due to ignorance and misfortune, but in too many instances is a result of carelessness and laziness. During the year, 280 former patients returned to the Clinic with fresh infections; of these, 34 (12·1 per cent.) were aged 20 years and under; 10 who returned were infected with syphilis. All of these patients knew of the prophylactic facilities available, but none had attempted to protect themselves.

INDUSTRIAL HYGIENE (p. 93).

This Division undertakes the investigation of hazards to health in factories, mines, and industry generally; ventilation of theatres, cinemas and other places; examination of children seeking employment in factories; and the diagnosis of cases of occupational disease; and it acts in an advisory capacity in regard to special problems in various branches of industrial hygiene.

Dust Diseases.—Investigational work by the Medical Officer of the Division into dust diseases, and on the Pneumonoconiosis Board of the Workers' Compensation Commission has been continued, and this Report includes a monograph (page 100) by Dr. Badham and Dr. Taylor (Second Government Analyst) entitled "The Lungs of Coal, Metalliferous, Sandstone and Other Workers in New South Wales—Chemical Analysis and Pathology." In the monograph the result is given of the examination of the lungs of 76 persons, 69 of whom were workers in various dusty occupations. Sixty-two of these were affected by varying degrees of pneumonoconiosis, whilst 7 were unaffected. Five lungs came from individuals who died from tuberculosis without any known dust exposure, and two from individuals not exposed to dust. Of coal miners' lungs, there are 32; metalliferous miners, 11; sandstone workers and miners, 8; and of miners who had done both coal and metalliferous or sandstone work, 13; together with a small group of miscellaneous workers in dusty occupations. These lungs are described and classified following pathological examination and chemical analysis, and have been grouped according to the industrial history, which has been carefully recorded.

Lead Poisoning.—One hundred and thirty-one individuals suspected of having lead poisoning were examined; of these, 54 were diagnosed as having lead poisoning with disability, and the remaining 77 as having no disability or as not being lead poisoned. Twenty-eight cases came from accumulator factories, 8 from vitreous enamelling works, and 7 from lead smelting works. Medical supervision has been instituted in most of the factories engaged in these processes; and assistance was given by the Division in the examination of 2,201 blood smears from cases of suspected lead poisoning. Special supervision of lead hazards has been carried out by the Department of Labour and Industry on the recommendation of this Division.

Other examinations and investigations included spray painters suspected of poisoning by lacquer thinners; suspected poisoning by arsenic; dermatitis due to oils, alkalis, trichlorethylene, linseed oil, tobacco dust, substances used in the manufacture of rubber, and skin conditions considered to be due to industrial processes. Inquiry was made into exposure to acid fumes, arsenic, lead, and other metals in the galvanising industry; and the working conditions in four confectionery factories were investigated with special reference to complaints regarding temperatures, humidities, and noise associated with certain processes.

Work in Compressed Air.—The Medical Officer of the Division is chairman, and his assistant a member of a committee set up by the Standards Association of Australia to prepare a model code of regulations for control of work in compressed air—(*a*) air lock operation, (*b*) diving.

Ventilation of Theatres, cinemas, cinema projection boxes, city stores, offices, and garages were the subject of several investigations and reports.

DIVISION OF MATERNAL AND BABY WELFARE.

In the Report of the Division (page 37), the Director again draws attention to the difficulty experienced in inducing expectant mothers to avail themselves of the facilities for their welfare available at the suburban ante-natal clinics. Attendances at these clinics were fewer in 1936 than in 1935. Deaths from puerperal causes in 1936 totalled 236, the rate from all causes (5·1 per 1,000 live births) being the same as that for 1935. This rate shows little tendency to fall, in spite of organised efforts by public health authorities and others for its reduction.

Baby Health Centre attendances increased by 59,202. The total attendances in 1936 numbered 674,588, compared with 615,386 in 1935. Considerable expansion of the work of the Division was made possible by the appointment of seven additional nurses. These appointments, in conjunction with the ever-welcome assistance of the County Women's Association, enabled the Department to open twenty

additional Baby Health Centres. Five of the new centres are in the outer ring of the metropolitan suburbs (Deewhy, Eastwood, Lindfield, Northbridge, and Pennant Hills); and fifteen in the country centres of Ardlethan, Ariah Park, Coolamon, Dora Creek, Eumungerie, Geurie, Gulgong, Jerilderie, Kempsey, Lawson, Mudgee, Rylstone, Stuart Town, Swansea and Tumut.

Departmental Film.—A noteworthy development in 1936 was the completion and screening of a motion picture which features the work of the Division at the Ante-natal Clinics and the Baby Health Centres. The film also shows the Mothercraft ("Tresillian") Homes, conducted by the Royal Society for the Welfare of Mothers and Babies. It is at these homes that the Baby Health Centre Nurses receive their post-graduate training in mothercraft.

The film, which is 4,000 feet in length, and of standard size, was widely shown in the metropolitan suburbs and in the larger country towns to audiences ranging up to 900 people. Outside of the metropolitan area the meetings are usually organised by the Country Women's Association, and have been held in the local picture theatres, the proprietors of which have been most helpful to the Department, and have lent their premises, and carried out all arrangements for the meetings free of charge.

This film was also displayed in Brisbane at the request of the Queensland Mothercraft Association, and at Adelaide in September, 1936, at the Women's Conference held there in connection with the Centenary celebrations.

SUPERVISION OVER FOOD AND DRUGS.

The Government Analyst reports (page 15) that a total of 33,758 samples were examined in the Chemical Laboratory in 1936, an increase of 1,729 samples over the number examined in any previous year. The total included 31,583 samples submitted in connection with pure food administration, and 2,175 in respect of public service supplies, etc.

Milk.—Samples of milk submitted under the Pure Food Act totalled 23,078 (16,207 from metropolitan inspectors, 3,383 from country district inspectors, and 3,488 from the Milk Board). Of milks collected in the metropolitan area, 1·29 per cent. did not conform to the standard, in comparison with 1·24 per cent. in 1935, and 1·06 per cent. in 1934. The proportion of adulterations in country milks amounted to 4·58 per cent.

A Royal Commission was appointed in 1935 to inquire fully into the milk supply of the Sydney metropolitan area, and considerable evidence had been taken before the close of the year.

Full particulars of adulterations in other foods are given in the tables appended to the Report

Investigations undertaken by this branch in 1936 concerned the composition of various types of wholemeal and other bread, examination of enamel glazes with a view to adoption of a standard, investigation into the deterioration of concrete pipes; this was found to be due to the lime content of the concrete being attacked by carbonic and fatty acids.

Detailed results are given of experiments made to determine the loss in weight of milk in passing over a water and brine cooler, and during pasteurisation.

Use of Preservative Dusting Powders on Fresh Meat.—The table below indicates that there was an appreciable decline in this reprehensible practice in 1936 :—

Year.	No. of Samples.	No. Found Adulterated.	Prosecutions.	Fines and Costs Imposed.
				£ s. d.
1933	3,697	473	372	787 5 0
1934	6,341	851	454	1,182 8 0
1935	6,622	535	324	670 3 0
1936	6,896	259	178	382 0 0

Butter.—Analysis of 93 samples of butter, collected in various parts of New South Wales in 1936, disclosed that in several instances the water content was in excess of the permitted 16 per cent., and several traders were successfully prosecuted. One large butter-packing firm, on whose premises a vacuum process butter-blending machine had recently been installed, claimed for its product improved "spreadability." Analysis disclosed that excess water content was mainly responsible for the alleged improvement.

Canadian Salmon.—A fine of £15 was imposed on a wholesale trader for packing inferior grade salmon in cans bearing labels indicating salmon of a superior grade to that of the code mark embossed on the cans.

Labelling of Disinfectants.—A determined effort was made throughout the year to enforce the regulation that on the labels of containers in which disinfectants are sold information shall be given of the dilution, and the manner and time of use, of the disinfectant in order to ensure its effectiveness as a disinfectant or germicide.

Disinfectant properties of Australian Tea Tree Oils.—With a view to framing standards under the Pure Food Act, an investigation was jointly undertaken in the Microbiological and Chemical Laboratories to test the disinfectant and other properties of Australian tea tree oils, in comparsion with other standard disinfectants; and also to ascertain the properties of some other oils that are used as substitutes, but sold as tea tree oil.

MICROBIOLOGICAL LABORATORY (p 175).

The examinations made in the Laboratory increased by nearly a thousand a month in 1936, some 88,043 specimens having been examined in comparison with 77,108 in 1935. Prevalence of diphtheria was responsible for submission of 15,340 swabbings, an increase of over 3,000 on the number examined in 1935. Serological tests increased by 5,773 as a result of additional attendances at the Ante-natal Clinics and Venereal Disease Clinics, 34,839 tests having been made in 1935 and 40,612 in 1936. Smears examined for gonorrhoea numbered 13,726 in 1935 and 17,288 in 1936, an increase of 3,562.

Milk Examinations.—A total of 1,358 samples of milk were tested bacteriologically, of which 649 were examined for their bacterial content only; and 687 were tested by animal inoculation. Of these latter, 12 (1·7 per cent.) were found to contain *tubercle bacilli*, and 82 (12 per cent.) *Brucella abortus*.

On page 179 there is a report by Dr. K. H. Grieve on his investigation of a further death from post-operative tetanus that occurred in a North Coast Hospital in November, 1936.

SECTION II: REPORTS OF THE MEDICAL OFFICERS OF HEALTH.

Metropolitan District.—In June, 1936, Dr. J. S. Purdy, Metropolitan Medical Officer of Health for over twenty-three years, entered on long leave, prior to his retirement from the Public Service. For purposes of staff co-ordination, arrangements were made for the inspection and clerical staffs attached to his office, and previously housed at the Sydney Town Hall, to be provided with accommodation in the departmental office at 52 Bridge-street.

Dr. J. Grahame Drew was appointed to the vacant position, and took over the duties of Metropolitan Medical Officer of Health on 21st September, 1936. Dr. Drew presents his first report on the health conditions of the metropolitan area of Sydney on page 144.

Newcastle and Hunter River District.—Dr. T. Lewis Dunn, Medical Officer of Health for the Hunter River Combined Sanitary District from early in 1934, resigned on 7th December, 1936, to accept an appointment as City Health Officer for Sydney, and Dr. J. R. Shannon of the Head Office Staff was appointed Medical Officer of Health for the Hunter River Combined Sanitary District.

In reporting on health conditions at Newcastle (page 149) Dr. Shannon directs attention to inquiries concerning housing accommodation at Newcastle, and states that during the depression period insufficient and inefficient attention had been given to this matter; and it is found that many of the older and formerly better-class houses of two or three stories have been divided into so-called flats, many of which comprise only one room. Following upon departmental representations, the Newcastle City Council took action to reorganise its staff and appointed an experienced qualified officer in charge of its inspectorial and sanitary section.

Broken Hill and District.—Dr. W. E. George, Medical Officer of Health at Broken Hill, reports that during 1936 there was a particularly low incidence of notifiable infectious diseases, and that the health of the city and district continued highly satisfactorily (page 152).

SECTION III.—STATE HOSPITALS.

Prince Henry (formerly The Coast) Hospital (page 153).—Dr. Baret's report covers a seven-months period from 1st January to 31st July, 1936, during which 6,221 patients were under treatment.

Upon the passing of the Prince Henry Hospital Act in July, the hospital was removed from Departmental control, and vested on 1st August, 1936, in a Board of Directors appointed under the Act, one member being the Director-General of Public Health.

The Prince Henry Hospital was established late in 1881 as part of an emergency organisation to cope with an extensive outbreak of smallpox that had invaded Sydney and adjacent suburbs.

Lidcombe, Liverpool and Newington State Hospitals and Homes.—The reports on these three hospitals are contained on pages 169–172. The average daily number of inmates resident was 1,585 at Lidcombe; 832 at Liverpool; and 583 at Newington. There were 371 admissions to the Lidcombe Infectious wards; and 548 admissions to the District Ward at Liverpool; out-patient attendances there numbered 15,402.

George-street Home, Parramatta.—Closed 11th December, 1936. The last of the asylum homes in the Parramatta District was closed on 11th December, 1936, by which date all the inmates had been removed to new buildings erected for their accommodation at the Lidcombe State Hospital.

The buildings in George-street, Parramatta, were erected in 1822 as quarters for the soldiers stationed at Parramatta, and are stated to have been first used as an asylum in 1862.

Legislation.

No enactment directly affecting public health was passed in 1936. In the past two years public health legislation in other Australian States, Great Britain and elsewhere, has been carefully examined, and a consolidating Public Health Bill was submitted for your consideration early in 1936 together with Bills for amendment of the Pure Food Act, Private Hospitals Act, Venereal Diseases Act, and the Cattle Slaughtering Act. I would again emphasise that the public generally is detrimentally affected, both in health and in pocket, by the absence of statutory control over the advertising and marketing of worthless nostrums and appliances. A minor instance of this type of fraud is mentioned in the report of the Chief Pure Food Inspector (page 28), where "iodine" lockets, worth less than a penny each, were being sold at 2s. 6d. each to wear as a safeguard against influenza, rheumatism, etc.

Fatalities from Cyanide Fumigation.—There are two further fatalities to be added to the 11 deaths from cyanide poisoning recorded on page 15 of the Annual Report for 1935. The two deaths in 1936 occurred during fumigation of an unoccupied flat in a block of flats in East Sydney. The operators had taken what they considered to be adequate precautions against diffusion of fumes, but, following discovery of the deaths, a careful examination of the premises disclosed that the gas had diffused from the flat under fumigation through cracks into a space beneath the flooring, and had penetrated into another flat, situated on the other side of a hallway, occupied by an elderly married couple. Their deaths were not discovered until some days after the fumigation, and were thought to be due to suicide until post mortem examination disclosed the cause to be asphyxia by cyanide gas.

Draft regulations have been framed with a view to providing for adequate control over this frequently highly dangerous procedure, but no action can be taken pending amendment of the Public Health Act.

IMPROVEMENT IN ACCOMMODATION FOR STAFFS HOUSED AT 93 MACQUARIE-STREET.

During 1936 considerable improvement was made to the accommodation at 93 Macquarie-street for the staffs of the Microbiological and Chemical Laboratories, the Medical Officer of Industrial Hygiene, and the Medical Officer attached to the Tuberculosis Division.

The Venereal Diseases Division is greatly hampered in its important work by overcrowded and unsuitable conditions, and it is hoped that this division will be provided with more suitable accommodation at an early date.

VISIT TO AMERICA AND EUROPE.

During the latter half of 1936, it was my privilege to be afforded the opportunity to visit America and Europe in order to obtain first-hand information regarding public health activities in other countries.

The League of Nations gave me the opportunity to visit Europe, provided that I commenced my study tour from England, and you were instrumental in obtaining approval for me to take advantage of this excellent opportunity. In consequence of the Government's approval and assistance, I was able to travel to England via America, in order to have the opportunity of seeing Public Health activities in the latter country on my way to Europe.

It is not practicable to describe in detail all the various activities investigated, though full notes of observations were made and have been kept for future reference. In the space available in this Report, it is only necessary to deal with some of the outstanding features, to compare the procedures and organizations of other countries with our own, and to point out any aspects which could be profitably adopted under our own local conditions.

United States of America.

(*a*) *General Hospitals.*—I visited most of the principal hospitals in quite a number of the larger cities of America, and one could not but be impressed by the large number of patients who are attended to in one institution. When a hospital accommodates nearly three thousand patients and controls a staff of about 4,000 persons, one is apt to conclude that our hospitals are comparatively insignificant in comparison. It is a matter of opinion whether a hospital which reaches such large proportions can really be as effectively controlled and administered as a smaller institution, and it seems to me that about 1,200 beds constitute a satisfactory maximum for administration and general economy.

(*b*) *Isolation Hospitals.*—Many of the large general hospitals have isolation units as part of their organization, and most of them endeavour to nurse infectious cases on the cubicle system rather than in open wards.

There are also tuberculosis wards or units attached to many of the general hospitals, whereby several hundred patients are provided with accommodation for purposes of observation and treatment. There are also, of course, sanatoria devoted exclusively to the treatment of tuberculosis in various parts of the country.

(*c*) *Medical Training Schools.*—A number of University Medical Schools was visited, including the School of Hygiene, John Hopkins' University, Baltimore.

(*d*) *General Organization.*—The organization of the United States in common with older countries is, of course, much more decentralised than is the case in Australia. The Local Authority is a distinct unit and, in some respects, is supreme. This has some good features, especially in the matter of providing funds for local health activities. Each Local Authority, however, tends to guard its rights and prerogatives with jealousy, and in many directions which came under my notice, there appeared to be a certain lack of co-operation between the State, City and County organizations.

The staffs attached to various Health Departments were highly specialised in different branches. The aim, apparently, is to concentrate on smaller defined areas than is customary with us. In one city, for instance, and this may be taken as more or less characteristic of all, the city area was divided into sections of 100,000 population, each section being provided with a medical officer of health, public health nurses, and other personnel.

It was a great privilege to see something of the organization of the United States Public Health Service at Washington, by the courtesy of Surgeon-General Parran.

This national organization is devoted exclusively to research and to assisting, on request, any public health authority in the elucidation or the control of any special problem. As this service is practically unrestricted for funds, it has at its disposal buildings, equipment and personnel which excites envy as well as admiration.

(*e*) *Publicity.*—I was very impressed with the activities in some of the Health Departments in connection with publicity and propaganda.

Efforts to enlighten the public are prominent activities, and much work is put into broadcasting, lectures and Health Plays which are recorded on gramophone records and subsequently used in other parts of the State. The cinematograph film was not utilised officially to the extent one would anticipate, but, I understand that this is due chiefly to the difficulty in having the films displayed in the ordinary programme.

A method of propaganda utilised fairly freely is that known as the "trailer." This really means a cinematograph film of short length which is attached to the end of an ordinary commercial film and carries a message regarding some aspect of health to the audience.

(*f*) *Maternal and Infant Welfare.*—America does not accept the midwifery nurse as such, and though the trained nurse receives a certain amount of training in obstetrics, there is no specialised training such as is known in Australia and many other countries.

The word "Midwife" conjures up in the mind of the average American the very worst type of our now practically extinct "Sairey Gamp."

The untrained midwife seems still to be in evidence to a much greater extent than in other countries, and in one State I was informed that 2 per cent. of the total births are attended by untrained midwives.

I think that our own organization regarding Maternal Welfare and also Infant Welfare, is more satisfactory than what I saw in America.

(*g*) There were many other aspects of public health which I investigated during my stay in the United States of America. Laboratory organization, with special reference to medico-legal examinations, control of water supplies and sewerage treatment, abattoirs, milk depots, garbage disposal, crematoria, and mausoleums, pure food administration, etc., are some of the activities concerning which much information was obtained.

The problem of tuberculosis in many of the larger cities of America is a very serious one.

Though many of the organisations that I saw impressed me with their scope and efficiency, there still remained a great deal to be done to meet the difficulties facing the various departments.

The problem of Venereal Diseases appeared to me to be similar, in most countries that I visited, to that in Australia.

Canada.

A special visit was paid to Toronto in order to obtain information regarding the curriculum of training in force at the School of Nursing, Toronto University. It is understood that the present course of training is experimental, and will probably be modified in the light of experience. The aim is to place the training of a nurse on an academic basis. To this end, practical ward work tends to be restricted in favour of time spent in lecture and class rooms, where the basic scientific ground work of nursing is given special attention. The course of training is three years, during which period the nurse receives instruction in general, obstetric and public health nursing.

I do not think such a scheme would suit Australian conditions, though the ultimate results will be watched with much interest.

The United Kingdom.

Every facility was placed at my disposal by the Ministry of Health, the Health Department of the London County Council, and by the Medical Officers of Health of the several large cities which I visited in England, Ireland and Scotland.

It would require too much space to recount in detail the many activities which I had the privilege to see. I was very impressed with the importance with which public health is regarded, and the vast sums of money made available for this purpose compel attention. The slum clearance carried out in London and other large cities is well known, but one has to see the actual change to appreciate the true significance of this colossal task, involving hundreds of millions sterling.

An outstanding feature in connection with infant welfare was the close and efficient co-ordination between the various organizations engaged in this work. The follow-up and recording of cases are very thorough, and once a child comes under notice, he is rarely lost sight of. The care at the Centres is very intensive, due to adequate staffing and the comparatively small areas served by individual centres. There is a very efficient interlocking of these activities so that the sickness of a baby, its hospitalisation and the end results of treatment are ascertained and recorded.

It was interesting to learn that, as in this State, considerable difficulty is experienced in keeping the "pre-school toddler" under supervision.

One of the most instructive visits was that paid to the Papworth Village Settlement for the care of tuberculous patients. It is a unique and excellent establishment which is doing a wonderful work. Every effort is made to rehabilitate patients, and to this end, various trades are taught and carried out in large workshops, which are excellently equipped, lighted and ventilated. The very efficient dust-prevention by exhaust ventilation was a striking feature of the workshops. I was very greatly impressed with the whole organization, which is under the control, guidance and inspiration of Sir Pendrill Varrier-Jones.

Denmark, Sweden and Holland.

The principal reason for visiting these countries was to investigate their organizations associated with maternal welfare. The maternal mortality rates of these countries are frequently quoted to our detriment, and for many years I felt an intense desire to see conditions on the spot. It was, therefore, with considerable interest that I approached the task of endeavouring to ascertain the secret of their apparent success.

I am quite satisfied, after intensive investigation, that the statistics of Holland alone are comparable with our own. Many causes of death, which, in this State, are clasified under puerperal mortality, are in Denmark, and to a greater extent in Sweden, ascribed to non-puerperal causes.

The training of midwives in Denmark and Holland is very thorough. In the former country, the period is two years, and in Holland, three years. The number of midwives trained annually is limited to twenty in Denmark and forty in Holland, but as they have been available in these countries for about two hundred years, and practically devote their life to this work, there is no advantage in training additional women who may become surplus midwives.

The following brief description of the training in Holland will give some idea of its comprehensive nature. With slight modification it applies also to Denmark.

In the first year the instruction is purely theoretical, comprising anatomy, physiology, bacteriology, obstetrics, physics and chemistry. Three hours per week during each of the three years are devoted to gymnastic exercises. The only practical work in the first year is domestic assistance in the lying-in wards.

During the second year, a commencement is made on the practical work. Under the guidance of trained midwives, the pupil attends actual labour, nurses patients and cares for infants. Clinical lectures and practical demonstrations on models alternate with the purely theoretical lectures in obstetrics. At the end of this year, an examination is held. If the candidate passes, she is competent to conduct labours outside the clinic under the superintendence of a trained midwife. In the third year the pupil works outside the school in order that she may become acquainted with the difficulties commonly met with in practice. She works in certain districts of the town under the superintendence of the municipal midwife of the district. During the third year, she also receives instruction in hygiene, in child welfare and acts at the Consultation Bureau for Child Welfare.

At the end of nine months she has to undergo the final examination, but her connection with the training school is maintained until the full three years of training has been completed.

Throughout the training there are classes held periodically for the purpose of recapitulating the work which has been carried out in the earlier periods of training.

Apart from the excellent training of midwives and medical practitioners, there are other reasons underlying the low mortality of Holland. These may be briefly summarised :

Firstly, midwifery hospitals, staffed by experts are available almost everywhere in the country. The greatest distance a patient would have to be transported, I was informed, would be eight to ten miles. An excellent ambulance service, together with good roads in a perfectly flat country, reduces the transport problem to a minimum and facilitates the speedy admission of a patient.

Secondly, the training of medical practitioners is just as thorough as in the case of midwives, and a practitioner who aspires to become an obstetric specialist spends five to six years as post-graduate assistant to his professor or other expert.

Thirdly, efficacious ante-natal care and supervision is given to almost every pregnant woman by the midwife or doctor, or both.

Fourthly, only perfectly normal cases are confined in the home. At the first sign of abnormality, the patient is immediately transferred to hospital.

Whilst in the Scandinavian countries and Holland, I took the opportunity to investigate many other aspects of public health. The information obtained has been an education in itself and should prove invaluable in the future.

I was extremely impressed with the organization for the control of tuberculosis, whereby a great reduction in the incidence of this disease has been brought about in these countries.

My visits to *France, Switzerland and Germany* were somewhat hurried, but the time at my disposal was utilised as fully as possible in investigating many matters of public health interest.

It remains only to be stated that the opportunity to visit other countries was not only a great privilege, but an instructive experience of outstanding importance to me. In coming into contact with various experts, in learning how problems have been met and in discussing aims and objectives for the future, one cannot fail to obtain knowledge, guidance and inspiration.

In each country I was treated with the greatest courtesy and consideration; every facility was afforded me to assist my enquiries, whilst the kindness and hospitality received were almost embarrassing.

I wish to record my sincere thanks to you, Sir, to the Government, and to the League of Nations for enabling me to proceed overseas, and I give my assurance that no effort will be spared to utilise the knowledge gained in the interests of the public health of this State.

MEDICAL STAFF CHANGES.

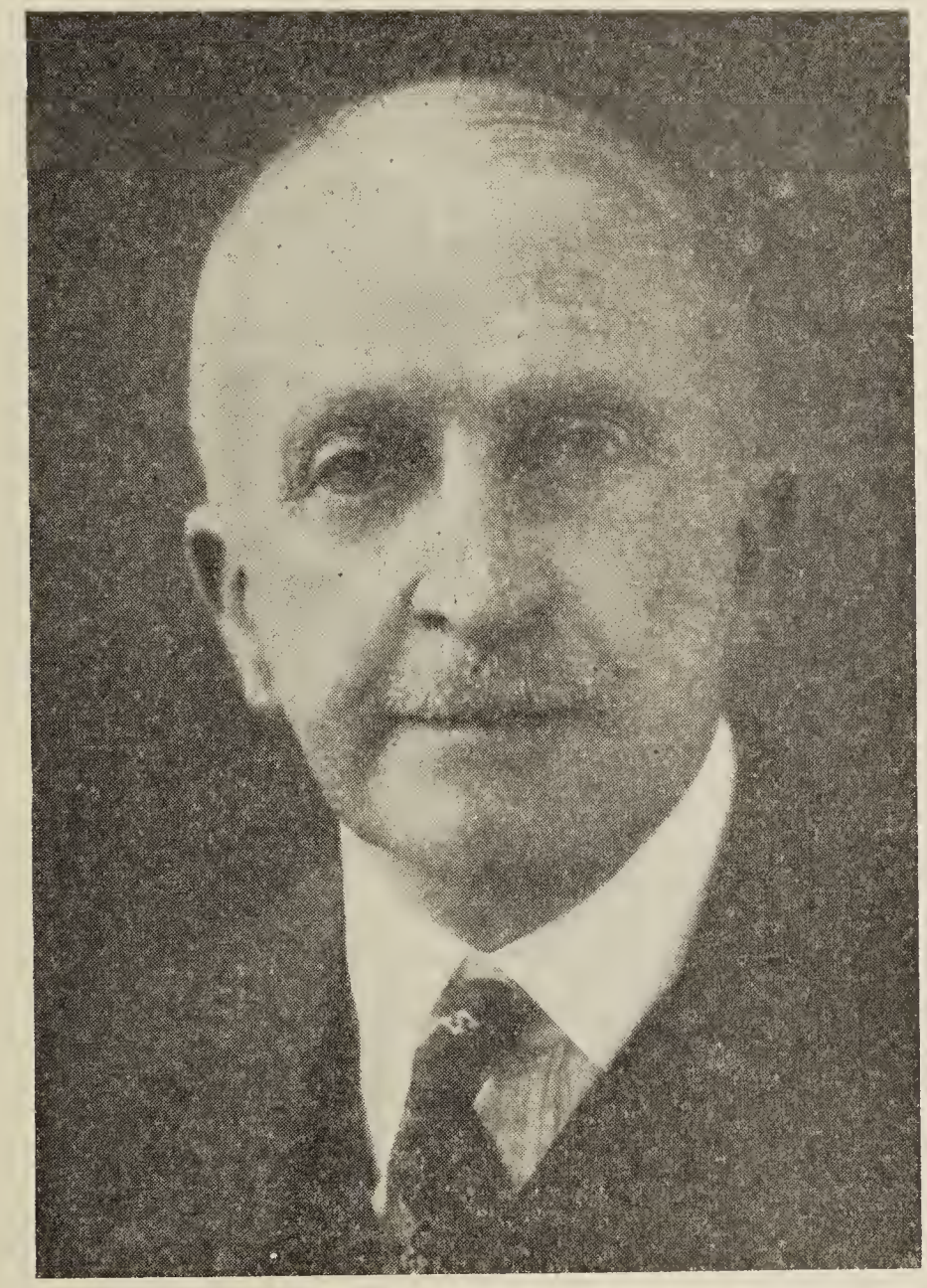
Appointments.—The medical staff of the head office was strengthened during the year by the appointment of four additional officers. Dr. J. R. Shannon, senior medical officer at Waterfall Sanatorium, took up duty at the Head Office as Assistant Medical Officer of Health on 4th August, 1936. The three medical officers appointed were Dr. E. S. A. Meyers (15th June); Dr. A. O. V. Tymms (22nd July) and Dr. J. J. Ward (12th October).

Retirements.—Dr. Arthur Aubrey Palmer, a greatly esteemed officer, who had filled the important post of Government Medical Officer for Sydney from 1st February, 1909, retired from that position on reaching the age of sixty-five years on 27th March, 1936. The Government has been fortunate in being able to retain Dr. Palmer as a part time officer for a further period of three years in connection with the medical work required by the Coroner.

Death of Dr. John Smith Purdy, D.S.O., V.D.

Medical Officer of Health for the Metropolitan Combined District, 27th July, 1913 *to 4th July,* 1936.

It is with profound regret that I record the death of Dr. John Smith Purdy, who had carried out for a period of twenty-three years the onerous and exacting duties of Metropolitan Medical Officer of Health. On 4th July, 1936, Dr. Purdy entered on leave prior to his anticipated retirement early in January, 1937, and his sudden death from pneumonia within three weeks of relinquishing his post came as a great shock to his former colleagues.



The Late Dr. John Smith Purdy, D.S.O., V.D.

During the period of Dr. Purdy's association with the Department he was indefatigable in his endeavours to awaken in the citizens themselves a realization of their responsibilities in obtaining improvements in housing; and in the handling and quality of food supplies; elimination of slum areas and congested spaces; provision of ample areas for parks and games in the whole of the metropolitan district; and of improved transport facilities.

Inauguration of "Health Week" in Sydney from 1923 onwards was one of his many activities for interesting the public generally in the importance of community health; and just prior to his sudden illness he was making special preparations for the "Health Week" to be held in October, 1936.

In his annual report for 1935, Dr. Purdy surveyed the health conditions of Sydney over the period 1913–1935; it was one of his special pleasures that during his term of office Sydney's population increased steadily to over a million and a quarter and the infantile mortality rate and the general death rate steadily fell, enabling him to quote Sydney as one of the healthiest cities in the world with a population of over a million persons.

Dr. Purdy served throughout the Great War, in Egypt, as special sanitary officer, and in France as Lieut.-Colonel in Charge of the Tenth Australian Field Ambulance. He was awarded the D.S.O. for his work at the Battle of Messines.

Death of Dr. Robert Maxwell McMaster, D.S.O.

I have also to record with very deep regret the death of another able officer of the department.

Dr. Robert Maxwell McMaster, who joined the staff of the Coast (now Prince Henry) Hospital in February, 1920, was Medical Superintendent of the Lidcombe State Hospital at the date of his untimely death on 23rd August, 1936.

The late Dr. McMaster served in the Great War with the rank of major, and was awarded the D.S.O. He was Medical Officer to the 17th Battalion, and later transferred to the 5th Field Ambulance.

ASSISTANCE FROM OTHER DEPARTMENTS AND ORGANISATIONS.

I desire to record my grateful thanks in acknowledgment of the valuable assistance and co-operation received throughout the year from the officers of various public departments, particularly officers of the Commissioner of Police, the Government Statistician, Crown Solicitor, Government Printer, and the Department of Local Government and Public Works, Lands Department and the Department of Agriculture.

I wish also specially to thank the Country Women's Association for their co-operation and invaluable help in connection with the establishment of Baby Health Centres; and the proprietors of many picture theatres for their co-operation and assistance in displaying departmental films. I again tender grateful thanks to the "Smith Family" and to the many other kindly citizens who throughout the year have provided entertainments for inmates of the State Hospitals and Homes, and have helped so materially to brighten their Christmas with welcome gifts and good cheer.

APPRECIATION OF STAFF.

In conclusion, I wish to express my sincere thanks to all members of the Staff, each of whom has contributed his share to the general results outlined in this report.

Their loyalty, co-operation and efficiency have enabled all difficulties to be overcome and the Department to carry out its duties and meet its responsibilities effectively.

My sincere thanks are due to Dr. H. G. Wallace who acted in my stead during my absence abroad, and who discharged his onerous duty with credit to himself and to the Department.

Finally, without wishing to make distinctions, I would like to thank Mr. Watt, whose efficient service as Secretary mean so much in the successful administration of the Department.

E. SYDNEY MORRIS,
Director-General of Public Health.

Extract from the Report of the Government Statistician, Mr. T. Waites, on the Vital Statistics of New South Wales for the year 1936.

Population.—The population at the end of 1936, was 2,681,736 of whom 1,355,493 were males and 1,326,243 females, the proportion being 102 males to 100 females. During the year the population increased by 24,070, or 0·91 per cent. Of this increase the excess of births over deaths accounted for 21,817, and the excess of arrivals over departures for 2,253. The mean population was 2,667,839.

Live Births.—The total number of live births was 46,193 equivalent to 17·31 per 1,000 of population which is 0·12 per cent. above the average of the previous five years. Of this number, 23,669 were males and 22,624 females, the proportion being 105 males to 100 females.

Dividing the State into the Metropolis and remainder of the State, there were 17,759 births in the former and 28,534 in the latter, corresponding to rates of 14·11 and 20·18, respectively.

Stillbirths.—The number of stillbirths registered was 1,419 (820 males and 599 females) which is 2·98 per cent. of all births, live and still, and equal to 0·53 per 1,000 of population.

Deaths.—The deaths during the year numbered 24,376 equivalent to a rate of 9·14 per 1,000 of the population. This rate is 5·18 per cent above the average of the previous five years.

The total includes 13,618 males and 10,758 females, equivalent to rates of 10·10 and 8·16 respectively per 1,000 of population. The rate in the Metropolis was 9·88 per 1,000 and in the remainder of the State 8·48.

Of the 24,376 people who died during the year 2,680 were under 5 years of age, 10,607 were aged from 5 to 64, and 11,082 were 65 and over, and 7 age not stated. The rates per 1,000 living in the main groups under and over 5 years were 12·44 and 8·85 respectively as compared with 9·39 and 8·60 the average of the previous five years.

Infantile Mortality.—The number of children under 1 year of age who died was 2,008 equal to 43·47 per 1,000 live births. To this total the Metropolis contributed 741 or 41·73 per 1,000 live births, and the remainder of the State 1,267 or 44·56 per 1,000 live births. The rate for 1936 is 3·62 per cent. above the average of the previous 5 years. Of the deaths under 1 year of age, 1,092 or 54·43 per cent. occurred under 1 week, 1,366 or 68·08 per cent. under 1 month, and 1,554 or 77·44 per cent. under 3 months.

Causes of Death.—Of the deaths during the year, the most important causes were as shown in the following statement, which for purposes of comparison also gives the average number of deaths during the preceding five years, due allowance having been made for increase in population :—

Causes of Death.	Number, 1936.	Average Annual Number, 1931-35. *	Increase (+) or Decrease (—) in 1936.	Causes of Death.	Number, 1936.	Average Annual Number, 1931-35. *	Increase (+) or Decrease (—) in 1936.
			per cen.				per cent.
Typhoid Fever	19	27	— 30	Other Diseases of the Circulatory System	30	30	...
Measles	22	42	— 48	Bronchitis	251	331	— 24
Scarlet Fever	26	38	— 32	Pneumonia	1,735	1,492	+ 16
Whooping Cough	120	127	— 6	Other Diseases of the Respiratory System	272	261	+ 4
Diphtheria and Croup	220	181	+ 22	Diseases of the Stomach	125	132	— 5
Influenza	214	326	— 34	Diarrhoea and Enteritis (under 2 years)	150	179	— 16
Plague	...	...	...	Diarrhoea and Enteritis (2 years and over)	106	117	— 9
Erysipelas	28	22	+ 27	Appendicitis	227	233	— 3
Infantile Paralysis	11	21	— 48	Hernia, Intestinal Obstruction	190	210	— 10
Lethargic Encephalitis	5	16	— 69	Cirrhosis of the Liver	111	96	+ 16
Epidemic Cerebo-spinal Meningitis	4	7	— 43	Other Diseases of the Digestive System	397	384	+ 3
Other Epidemic Diseases	18	27	— 33	Bright's Disease (Acute and Chronic)	1,549	1,466	+ 6
Tuberculosis, Respiratory System	955	990	— 4	Other Genito-urinary Diseases	404	393	+ 3
Tuberculosis, Meninges and Nervous System	37	41	— 10	Puerperal Septicaemia	82	70	+ 17
Other Tuberculous Diseases	59	63	— 6	Other Puerperal Diseases	210	208	+ 1
Cancer	2,781	2,672	+ 4	Malformations	250	254	— 2
Diabetes	413	419	— 1	Congenital Debility	101	88	+ 15
Other General Diseases	619	559	+ 11	Premature Birth	674	649	+ 14
Diseases of the Blood	224	249	— 10	Other Developmental Diseases	357	318	+ 12
Chronic Poisonings and Intoxications	26	27	— 4	Senility	705	734	— 4
Meningitis	103	99	+ 4	Suicide	291	321	— 9
Cerebral Haemorrhage and Apoplexy	687	830	— 17	Accident	1,276	1,113	+ 15
Insanity	77	90	— 14	Other Violence	97	116	— 16
Convulsions of Infants	15	13	+ 15	All other causes	225	225	...
Other Diseases of the Nervous System	576	603	— 4				
Diseases of the Heart	5,830	5,146	+ 13	Total	24,376	23,175	+ 5
Diseases of the Arteries, Atheroma, etc.	1,472	1,120	+ 31				

*Adjusted to the mean population of 1936.

Epidemic Diseases.—The deaths from epidemic diseases numbered 687 as compared with an average of 834 during the previous five years, the rate decreased by 18 per cent. The deaths from scarlet fever numbered 26 an experience which was 32 per cent. less than the average rate of the previous five years.

Tuberculosis of the Respiratory System was the cause of 955 deaths in 1936, the rate, 358 per million living, being 4 per cent. below the average rate of the previous five years, The deaths of males numbered 586 and of females 369 and the rates per million living were 434 and 280 respectively. The mortality rate from other tuberculous diseases was 7 per cent. below the average of the previous five years.

ANNUAL DEATH RATE PER 1,000 OF THE POPULATION IN NEW SOUTH WALES, 1875-1936.

* 1919—Influenza Epidemic (deaths, 6,387).

CANCER, TUBERCULOSIS, AND HEART DISEASE.

Annual Death Rate per 100,000 of the Population in New South Wales, 1875-1936.

Cancer.—The deaths from cancer numbered 2,781, equal to a rate of 1,042 per million living, and 4 per cent. above the average rate of the preceding quinquennial period. The deaths of males numbered 1,379 and of females 1,402, the rates for each sex being 1,022 and 1,063 per million respectively. The death rate from this disease has been increasing steadily for a number of years.

Cerebral Haemorrhage.—To cerebral haemorrhage and apoplexy during 1936 were ascribed 687 deaths, of which 332 were those of males and 355 of females. The rate was 258 per million living, or 246 for males and 269 for females. The rate for 1936 is 17 per cent. lower than that for the previous quinquennium. The Government Statistician points out however that considerations of certification and classification have rendered this comparison unreliable.

Diseases of the Heart were the cause of 5,830 deaths, the rate being 2,185 per million. The apparent increase in these deaths during the last 25 years is probably the result of the greater attention given to pathological diagnosis. Furthermore, in combination with other diseases, where precise information is lacking, diseases of the heart are given precedence over many other diseases. The rate for deaths from heart diseases in 1936 was 13 per cent. above the average rate of the preceding five years. Of the total deaths, 3,387 were of males and 2,443 females, the corresponding rates per million living of each sex being 2,511 and 1,852.

Bronchitis and Pneumonia.—Bronchitis with 251 deaths, equal to a rate of 94 per million living, showed a decrease of 24 per cent. and pneumonia, with 1,735 deaths or 650 per million, an increase of 16 per cent. as compared with the experience of the previous five years.

Of the deaths from bronchitis, 148 were of males and 103 of females, or 110 and 78 per million living respectively. Of the persons who died from pneumonia, 997 were males and 738 were females, and the rates were 739 and 560 per million living of each sex.

Bright's Disease.—During 1936 there were 1,953 deaths due to diseases of the genito-urinary system, of which 1,549 were caused by acute nephritis and Bright's disease. The rate for nephritis (acute and chronic) was 581 per million living; for males 660 per million, and for females 500 per million. In 1936 the rate was 6 per cent. more than the average of the previous five years. The general tendency of the rate has been to increase.

Diseases of Infants.—The principal causes were prematurity 674, other developmental diseases 659, diarrhoea and enteritis 110, pneumonia 226, epidemic diseases 106 (including whooping cough 74, diphtheria 12), bronchitis 20, and meningitis 19.

The following statement show the causes of deaths of children under 1 year of age per 1,000 live births, during 1936, in comparison with the preceding five years :—

Causes of Death.	Males.		Females.		Total.	
	1936.	1931–35.	1936.	1931–35.	1936.	1931–35.
Epidemic Diseases	2·37	2·64	2·22	2·73	2·30	2.68
Tuberculous Diseases	·25	·18	·09	·19	·17	·19
Syphilis	·25	·20	·13	·20	·20	·20
Meningitis	·55	·45	·27	·33	·41	·39
Convulsions	·51	·17	·13	·22	·32	·19
Bronchitis	·51	·62	·36	·50	·43	·56
Pneumonia	4·77	4·71	5·02	3·67	4·89	4·20
Diarrhoea and Enteritis	2·49	3·25	2·26	2·41	2·38	2·84
Malformations	5·28	5·08	3·37	4·08	4·35	4·60
Congenital debility	2·03	2·40	2·35	1·41	2·19	1·92
Premature Birth	15·34	15·51	13·81	12·55	14·59	14·07
Injury at Birth	4·73	3·84	3·55	2·92	4·16	3·39
Other Diseases of Early Infancy	4·01	3·97	3·11	3·03	3·57	3·51
Other Causes	3·38	3·59	3·64	2·81	3·51	3·21
All Causes	46·47	46·59	40·31	37·05	37·47	41·95

SECTION 1.

A.—PUBLIC HEALTH ADMINISTRATION.

Chemical Laboratory.

REPORT OF THE GOVERNMENT ANALYST FOR THE YEAR ENDED 31st DECEMBER, 1936.

Staff:

Government Analyst	Sidney G. Walton, F.A.C.I.
Second Government Analyst	Harold B. Taylor, M.C., V.D., D.Sc., F.I.C., F.A.C.I.
Senior Assistant Government Analyst ...	Arthur D. Dibley, A.S.T.C., A.A.C.I.
Assistant Government Analyst	Robert G. O'Brien, A.S.T.C., A.A.C.I.
Analysts	Ernest S. Ogg, B.Sc., A.A.C.I.
	William F. Fisher, A.S.T.C., A.A.C.I.
	Ronald C. Sparks, A.S.T.C.
	Thomas A. McDonald, A.S.T.C.

Three laboratory assistants; 1 laboratory attendant; 1 clerk (Grace McGlynn); 1 shorthand-writer and typist.

During the year 1936 a total of 33,758 samples were examined in the Chemical Laboratory representing an increase of 2,676 over the number examined in 1935, and an increase of 1,729 over the number examined in the Laboratory in any previous year. This total included 31,583 samples submitted in connection with the administration of the Pure Food Act, and 2,175 examined for the Public Services of the State.

Pure Food Act.

Milk.—The milks examined in connection with the administration of the Pure Food Act totalled 23,078, representing 16,207 samples collected in the metropolitan area by food, municipal and shire inspectors, 3,383 collected by the same authorities in country districts, and 3,488 submitted by the Milk Board. Of the total milks collected in the metropolitan area by food, municipal and shire inspectors, 1·29 per cent. failed to conform to standard, in comparison with 1·24 per cent. in 1935, and 1·06 per cent. in 1934. The proportion of adulterations in the country milks amounted to 4·58 per cent. of the total collected, while that of the samples collected by the Milk Board amounted to 1·72 per cent.

The proportion of adulterated milks examined during the year was less than in 1935, being 1·84 per cent. of the total examined, in comparison with 2·14 per cent. in 1935.

The following table gives particulars of the whole of the milk adulterations recorded:—

Table I.—*Particulars of Milk Adulteration.*

	Samples Deficient in Milk-fat.		Samples Containing Added Water.		Samples Deficient in Milk-fat and Containing Added Water.		Dirt.	Total.	
	No.	Proportion per cent.	No.	Proportion per cent.	No.	Proportion per cent.		No.	Proportion per cent.
Collected in the Metropolitan Area ...	107	0·66	85	0·52	17	0·10	1	210	1·29
Collected in Country Districts	81	2·39	64	1·89	10	0·29	...	155	4·58
Submitted by the Milk Board	32	0·92	24	0·69	4	0·11	...	60	1·72
	220	0·95	173	0·75	31	0·14	1	425	1·84

Weight of One Gallon of Milk at Varying Temperatures.—During the recent Milk Inquiry information was sought by the Milk Commissioner as to the loss of milk occurring during the process of cooling as practised at the receiving depots in the country. As a similar type of cooling coil was available at the Dairy Farmers' Co-operative Milk Company Ltd., Sydney, this equipment was utilised to obtain the information sought. Further work was undertaken to ascertain the loss during pasteurisation as carried out by the "holding" process, with the equipment in use prior to the Milk Inquiry.

At the request of the Commissioner further work was undertaken to establish the weight of an Imperial gallon of milk at various temperatures. Full details of the experiments and the results obtained will be found in an Appendix to this Report. (p. 24).

The samples other than milk submitted for analysis in connection with the administration of the Pure Food Act amounted to 8,505, consisting of 8,403 foods and 102 drugs.

Bread.—The question of the composition of the various types of bread continues to be of interest. A number of samples of alleged wholemeal bread were submitted for examination, which, on analysis, were found to have a crude fibre content (calculated on the dry substance) of less than 1·6 per cent. Several prosecutions were successfully undertaken by the Department. As a result of further work carried out in the laboratory, it was recommended that the standards for wholewheat flour, wholewheat bread, brown bread, barley, rye and other breads, should be amended. The recommendations thus made include a provision for a minimum crude fibre content, as determined by the A.O.A.C. method of analysis. It is considered that wholewheat flour should contain not less than two parts per centum of crude fibre, wholewheat bread not less than 1·6 parts per centum of crude fibre, and brown bread not less than 1·2 parts per centum of crude fibre. In each case, the crude fibre content is to be calculated on the moisture-free substance.

It was also recommended that salt, milk, malt and carbohydrate sweetening substances can be added to any variety of bread; and that flour which is intended solely for bakers' use may contain specified amounts of acid calcium phosphate, ammonium chloride, bromates, and calcium sulphate. The presence of persulphate in any form is prohibited.

If the suggested recommendations are given effect to, it is evident that, in order to secure effective control, the number of samples submitted for examination must be greatly increased, and an adequate staff must be provided to cope with the work.

Enamel Ware.—A number of cases of poisoning have been reported in England which were traced to the use of enamel ware containing poisonous metallic substances. It was thought desirable to incorporate a regulation under the Pure Food Act to control the quality of enamel ware used or likely to be used in the preparation etc., of food. Prior to making any recommendation in this regard, it was considered desirable to examine the quality of the enamel ware on the market in this State. From the results obtained, which are given hereunder, it is evident that a large proportion of the enamel ware being offered for sale is of inferior quality, and the glaze does not conform to the specification of the London County Council for enamel ware glaze required for use in the Council's institutions. As the result of the investigation, it is recommended that, in order to avoid possible poisonings similar to those which occurred in England, the following standard, which is similar to that adopted by the London County Council, be incorporated as a regulation under the provisions of the Pure Food Act :—

> No person shall sell enamel vessels for the storage or preparation of food, or which are likely to be used for the storage or preparation of food, unless such vessels are free from antimony, lead, and/or arsenic, and when filled as full as is convenient with boiling 0·5 per centum solution of citric acid in water, and allowed to stand for twenty-four hours without being heated or artificially cooled, yield on ignition of the residue obtained when a definite proportion of the solution is evaporated an amount of ash not exceeding 1 milligramme per square centimetre of surface exposed to the action of the acid. On further treatment with a similar fresh volume of the boiling acid solution, and standing, evaporating, and igniting as before, the ash yielded shall not exceed 0·5 milligramme per square centimetre of surface exposed to the action of the acid.

Hereunder are given the results of analysis of enamel ware examined in the laboratory :—

Examination of Enamel Glazes.

Analyses by R. G. O'Brien, A.S.T.C., A.A.C.I.

Type of Vessel.	Price Paid.	Approximate Capacity of Vessel.	Country of Manufacture.	Ash obtained by First Extraction with 0·5 per cent. Citric Acid and Ignition.	Ash obtained by Second Extraction with 0·5 per cent. Citric Acid and Ignition.	* Injurious Substances.	† Non-injurious Substances
				Mgm. per sq. cm. of Surface Exposed.	Mgm. per sq. cm. of Surface Exposed.		
	s. d.	ml.					
Pie Dish	1 0	1,350	Great Britain ...	1·43	0·55	No lead, arsenic or antimony present.	Zinc, boron, fluorine, etc., present.
Pie Dish	0 6	450	,, ...	1·40	0·65	,, ,, ...	,, ,,
Jug	2 3	570	,, ...	0·29	0·05	,, ,, ...	Boron, fluorine, etc., present.
Brawn Bowl ...	1 4	400	,, ...	0·48	0·30	,, ,, ...	,, ,,
Jug	2 3	1,030	Australia	1·72	1·15	Antimony and traces of arsenic present.	Zinc, boron, fluorine, etc., present.
Pie Dish	0 10	520	,, ...	2·39	1·90	,, ,, ...	,, ,,
Frying Pan ...	1 6	1,000	,, ...	2·32	1·46	,, ,, ...	,, ,,
Soup Plate	0 9	380	,, ...	1·85	1·36	,, ,, ...	,, ,,
Saucepan	2 6	1,100	,, ...	2·02	1·49	,, ,, ...	Zinc, copper, boron, fluorine, etc., present.
Bowl	0 10	600	,, ...	2·90	2·17	,, ,, ...	,, ,,
Mug	0 4½	230	Japan	1·63	0·78	Small amount of antimony and traces of arsenic present.	Boron, fluorine, etc., present.
Soup Plate	0 4½	350	,, ...	1·96	1·11	Antimony and traces of arsenic present.	,, ,,
Mug	0 3	210	,, ...	3·72	3·06	,, ,, ...	,, ,,
Meat Plate	0 3	160	,, ...	0·64	0·22	,, ,, ...	,, ,,
Bowl	0 3	450	,, ...	0·45	0·08	Small amount of antimony present.	Small amount of zinc, boron, fluorine, etc., present.
Child's Plate ...	0 11	200	Czecho-Slovakia	0·28	0·04	No lead, arsenic or antimony present.	Copper, boron, fluorine, etc., present.
Child's Mug ...	0 10½	220	,, ...	0·16	0·04	,, ,, ...	,, ,,
Child's Plate ...	0 10	200	,, ...	0·27	0·06	,, ,, ...	Cobalt, boron, fluorine, etc., present.
Brawn Bowl ...	1 3	370	Sweden	0·17	0·03	Small amount of antimony and traces of arsenic present.	Boron, fluorine, etc., present.
Pie Dish	2 5	1,900	,, ...	0·42	0·05	,, ,, ...	,, ,,
Frying Pan ...	2 4	900	,, ...	0·70	0·05	,, ,, ...	,, ,,

* Lead, arsenic and antimony are considered to be injurious substances.

† Zinc, boron, fluorine, tin, copper, etc., are considered to be non-injurious, if the proposed solubility limits are observed.

Of twenty-one samples examined, ten conformed to the proposed solubility limits. Of this ten five were free from injurious substances, and five contained antimony.

Eleven samples exceeded the proposed solubility limits.

Ices.—A number of samples of flavoured ices were submitted for examination during the year. Many of these ices were sold under names intimating that they were the products of various fruits, milk, etc., but as a result of the analysis it was found in many cases that the amount of fruit, etc., present was negligible. In view of this, it has been decided to introduce a standard requiring that Fruit Ice Blocks shall contain not less than 3 per cent. of fruit juice, and that Milk Ice Blocks shall contain not less than 50 per cent. of milk. It has also been observed that when artificial colour is used in the preparation of Ice Blocks, the colour becomes much less noticeable when the article is frozen. In consequence many of the Ice Blocks at present on the market contain a comparatively large amount of artificial colouring matter. As these articles are usually consumed by children, consideration might be given in the future either to the elimination of artificial colouring matter, or to limiting the amount permitted to be used.

Spirits.—As the result of a minute pointing out that for nine years prior to 1935, practically no sample of spirits had been submitted for analysis by the Metropolitan District Licensing Inspector, 25 samples of spirits were submitted towards the end of 1935. Of these samples 2 were found to be adulterated, showing the necessity of supervision. During 1936, only 4 samples of spirits were received, 2 of which were found to be adulterated. It is evident from this that greater control is necessary in order to ensure that the public might be protected from adulterated liquor.

Tomato Sauce.—Many of the tomato sauces examined, especially those coming from other States, continue to show an excessive mold count. This use of inferior material will be controlled as the result of the adoption of a standard limiting the mold content to a count not exceeding 50 per cent. of fields positive, as determined by the A.O.A.C. method of counting.

Canned Peas.—As the result of finding blue colouring matter in canned green peas a request was made by the firm manufacturing for permission to continue this practice, by an alteration of the Regulation under the Pure Food Act governing this matter. After consideration of the subject, it was recommended that the request be not acceded to.

"Smoked" Meat.—The trade is continuing the practice of preparing "smoked" meat (legs of mutton) by the use of artificial colouring matter (Bismarck Brown, etc.). During the year several prosecutions have been recommended with a view to eliminating the practice.

Permitted Colours.—Requests were received from two firms asking that the number of colouring matters permitted in food should be extended to include an additional six colours. This matter is still under consideration, and some time must elapse before a recommendation can be made.

Fruit and Vegetable Sprays.—The question of the use of arsenical and other poisonous sprays to combat insect pests on vegetables and fruit is still receiving attention. Judging by analyses, it is evident that, although occasional heavy contamination may be encountered at times, the general results appear to indicate that much more care is being exercised than formerly. Owing to the shortage of staff, this matter has not been investigated as fully as might be desired.

Menthol Liniment.—Owing to the trade restrictions imposed by the Commonwealth Government on imports from certain countries, manufacturing chemists found it impossible to obtain supplies of natural menthol for pharmaceutical preparations, and as a substitute were obliged to use synthetic menthol. This substance is not recognised by the British Pharmacopoeia, and its use, therefore, constitutes an infringement of the provisions of Regulation 68 of the Pure Food Act. Moreover, synthetic menthol possesses lower therapeutic value than the natural article. A sample of liniment of menthol was submitted for examination, and was found to have been prepared with the synthetic substance. As a result of representations made by this Department to the manufacturing firm concerned, arrangements were made with the Customs authorities to permit of the importation of natural menthol.

The following table gives particulars of the whole of the adulterations recorded :—

Particulars of Adulterations.

Nature of Sample.	Number of Adulterated Samples.	Particulars of Adulteration.
Beer	5	Preservatised and not labelled.
Wholemeal Bread	7	Deficient in Wholemeal.
,, ...	1	Deteriorated and unfit for consumption.
Brine, Pumping	7	Contained foreign matter and impurity.
Butter.....	8	Excess water.
,, ...	3	Excess water and deficient in fat.
Cordials and beverages ...	18	Deficient in fruit juice.
,, ,, ...	1	Deficient in fruit juice and contained artificial flavouring.
,, ,, ...	5	Deficient in fruit juice and presence of preservative not declared.
,, ,, ...	1	Deficient in fruit juice and contained large amount of copper.
,, ,, ...	3	Artificially coloured and flavoured.
,, ,, ...	1	Illegal addition of foreign substance.
,, ,, ...	5	Contained excess preservative.
,, ,, ...	1	Presence of preservative not declared.
,, ,, ...	1	Presence of artificial colour not declared.
Cream	2	Processed Cream.
,, ...	2	Deficient in milk-fat.
Dripping.....	1	Rancid.
Essences, flavouring	2	Imitation essence.
Fish, Tinned	3	Metallic contamination.
Flour, S.R.....	4	Deficient in carbon dioxide.
,, ...	1	False statement on label.
Fruit, dried	4	Excess of sulphur dioxide.
,, tinned	2	Excess of metallic contamination.
Ice cream	17	Deficient in milk-fat.
,, ...	3	Thickened with starch.

Particulars of Adulterations—continued.

Nature of Sample.	Number of Adulterated Samples.	Particulars of Adulteration.
Ice cream stabiliser	1	Prohibited thickening agent.
Icing sugar	5	Contained starch.
,, mixture	3	Contained excess starch.
Jam	5	Deficient in fruit.
Jelly crystals	1	Artificially flavoured and coloured.
Junket tablets	1	Excess boric acid.
Meat—		
Fresh	78	Illegally preservatised.
"Smoked"	5	Artificially coloured.
Minced	140	Illegally preservatised.
Tripe	11	,,
Sausages	133	Contained excess of permitted preservative.
,,	2	Contained excess starch.
Smallgoods	4	Excess starch.
,,	1	Excess starch and excess preservative.
,,	2	Excess nitrite.
,,	1	Excess nitrate and nitrite.
Milk	220	Deficient in milk-fat.
,,	173	Contained added water.
,,	31	Contained added water and deficient in fat.
,,	1	Contained dirt.
Milk containers	4	Contained dirt.
Pickles	3	Saccharin.
,,	2	Artificially coloured.
Soap	5	Silicate of Soda.
Spirits	2	Excess added water.
Tomato sauce	33	Excessive mold content.
,,	2	Artificially coloured.
,,	2	Artificially coloured and contained apple.
Tripe liquor	3	Contained sod. peroxide.
Vegetables, fresh	1	Excess arsenical contamination.
,, tinned	3	Artificially coloured.
Vinegar	2	Deficient in acetic acid.
,,	4	Not true to label.
Total	992	
Drugs—		
Aspirin tablets	1	Drug not declared on label.
Camphorated chalk	3	Deficient in camphor.
Iodine paint	1	Not true to label.
Iodine tincture	2	Excess iodine and potassium iodide.
Malt extract	3	Deficient in diastasic value.
Menthol liniment	1	Synthetic menthol used in preparation.
Olive oil	1	75 per cent. Arachis oil.
Total	12	

Samples Submitted for the Public Services of the State.—The samples examined for the Public Services of the State numbered 2,175, particulars regarding which are given hereunder :—

Subsidised Institutions submitted 285 samples, including food for examination as to quality, drugs *re* purity and conformity to Pharmaeopoeial standards, eows' milk with a vi w to eontrolling dairy herds and also in regard to quality of supplies from outside sources, human milk in relation to infant feeding, various exhibits in regard to the diagnosis of disease, stomaeh lavage and vomit in cases of poisoning, cte.

Government Stores Department—The Government Stores Department forwarded 574 samples for examination, embraeing drugs, foods, soaps, cleansing powders, inks, disinfectants, lubricants, solder, waterproof material, leather, paint, tar and miscellaneous samples, such as clinical thermometers, linoleum, fuel oils, etc. These samples were submitted for the purpose of the control of supplies made under contract, and also with a view to the formulation of suitable specifieations for the extended range of articles necessary for the varied requirements of the Public Service. Although the aetual number of samples submitted for examination is less than in previous years, the amount of work entailed in this section of the activities of the Branch is considerably greater than formerly, owing to the incrcased number of drugs forwarded for analysis. The purchase of drugs for hospital purposes is now undertaken by the Government Stores Department, and samples of supplies arc submitted to strict chemical examination before approval is given for their usc. It has bcen frequently found that drugs have not eomplied with the requirements of the British Pharmacopoeia, and supplies havc aceordingly had to be rejeeted. Additional tests havc also been incorporated in some of the oil specifications, and the services of the analyst engaged on work for the Government Stores Department havc beeu made available to serve when required on various eommittees dealing with specifications.

Pharmacy Board.—Only one sample was submitted by the Pharmaey Board during the year in eonnection with the administration of the Poisons Act.

Owing to the inereasing use of amidopyrine and its salts and preparations, the unrestrieted sale of these substanees and the ignorance of the consumer regarding their potential danger rendered it advisable to recommend their addition to the Second Sehedule of the New South Wales Poisons Act. In this manner the poisonous properties of these substances will be brought under the notice of the intending consumer.

In a brief resumé of the work of the laboratory dated 21st December, 1936, I drew attention to a death occasioned by the consumption of a dye preparation containing a considerable quantity of nitrobenzene. The fact was brought to notice that this preparation was in common use, and it might, therefore, be considered advisable to add nitrobenzene and preparations containing more than a specified percentage of this substance to the Second Schedule of the Poisons Act. This procedure has since been followed, with the result that nitrobenzene and preparations containing more than a definite percentage of this substance can now only be sold by a person with a license to sell poisons, and the container must be labelled "Poison." Since the death referred to above, two further deaths have been recorded from this substance, the result, doubtless, of the publicity given to the first death.

Police Authorities forwarded 429 exhibits for examination in connection with criminal investigations, 43 exhibits in regard to the administration of the Police Offences Amendment (Drugs) Act, and 5 exhibits of animal viscera.

Exhibits were submitted in connection with the doping of racing dogs, and were found to contain cocaine hydrochloride, caffeine, phosphorous, extract of nux vomica, extract of damiana, ether, tincture of digitalis, and glycerophosphates.

The assistance of the laboratory was also sought in connection with a case of alleged "ringing-in" of greyhounds. Examinations of the exhibits of hair submitted showed that dyeing had been carried out on some of the animals, and convictions were secured.

An expression of opinion was sought by a District Court Judge as to whether certain letters and receipts had been written with similar ink and at the same time. The result of examination showed that all the writing had been made with iron ink, but as only a comparatively short period had elapsed between the various alleged dates of writing an opinion could not be expressed as to the comparative age of the writing. Chemical tests as evidence of the age of writing may have only a limited value, since many factors have to be taken into consideration in their interpretation. These factors are exposure of writing, thickness of writing and the question of whether the writing has been blotted quickly, or allowed to dry, etc. Useful evidence was obtained, however, in the case under notice by a study of the paper on which the documents were written, by which it was made evident that many of the receipts, although bearing dates up to eight months apart, had been written on different portions of the same sheet of note paper.

The following table gives particulars of the criminal charges investigated :—

Criminal Investigations.

Miscellaneous, *re* uncertified deaths	250	exhibits.
Attempted murder	23	,,
Attempted suicide...	1	,,
Attempted poisoning	33	,,
Murder	5	,,
Malicious bodily injury	10	,,
Malicious damage to property ...	10	,,
"Ringing-in" racing dogs ...	2	,,
Doping racing dogs	8	,,
Administering cantharides ...	3	,,
Incendiarism	21	,,
Abortifacients and illegal practice	11	,,
Indecent assault	7	,,
Stealing	14	,,
Robbery by violence	2	,,
Laying poison baits	8	,,

Criminal Investigations—continued.

Animal poisoning	18	exhibits.
Selling petrol without a license ...	1	,,
Selling methylated spirits to aborigine	1	,,
Drink cure	1	,,
	429	,,

Drugs.

Opium	34	,,
Cocaine	1	,,
Miscellaneous	8	,,
	43	,,

Animal Viscera.—Five exhibits of animal viscera were submitted for examination, strychnine being found in three cases, and the chemical examination yielding negative results in the other two cases.

Coroners' Enquiries.—Coroners submitted exhibits, details of which are given hereunder, in connection with 90 deaths which formed the subject of police investigation. In 65 cases the viscera, consisting usually of the stomach and contents and the solid organs, were examined for poisons, in 4 cases viscera and blood, in 1 case viscera, blood and urine, and in 3 cases viscera and urine were examined, the viscera for poisons, and the blood and urine for alcohol. In 5 cases urine, in 6 cases blood, and in 3 cases urine and blood were examined for the alcohol content. In 2 cases blood was examined for confirmation of diagnosis of death by drowning, and in 1 case blood was examined for carbon monoxide. In addition, numerous miscellaneous exhibits were examined for police authorities in connection with these deaths.

Since the publication of my annual report for the year 1935 in which a method was described for the estimation of alcohol in blood and urine, there has been an increase in the number of exhibits submitted for examination. The specimens generally were taken either from the drivers of motor vehicles involved in accidents, or from persons knocked down by motor vehicles, in many instances fatal results having ensued. I am of the opinion that in all motor accidents having fatal results, an examination of the urine and blood of the deceased person or persons, and, if possible, of the driver of the vehicle, should be made. This procedure should also be followed in cases of accident where the injury does not result in death. If the chemical examination proves that the injured person had been drinking, it is evidence in favour of the motor driver, while, on the other hand, if the analysis proves that the driver had been drinking it definitely strengthens the case against him. I understand that it is the intention of the Government Medical Officer to have specimens of blood and urine examined in future in all fatalities due to motor accidents, in order to assist the Coroner in his findings.

A fatality was narrowly prevented in the case of an infant. The child was under medical treatment, and a mixture was prescribed which on being given produced cyanosis. A second dose was given later and the child again became cyanosed, some difficulty being experienced in averting death. The doctor then sent to the Laboratory the unused portion of the medicine accompanied by the prescription and as the result of analysis it was found that sodium nitrate had been dispensed in the mixture in place of sodium citrate.

During the year two deaths occurred as the result of the use of hydrocyanic acid gas for household fumigation. Two elderly people (man and wife) had not been observed for some days by the caretaker of the blocks of flats in which they were residing. Upon investigation being made, they were found to be dead. Their natural attitude and the presence of drinking vessels lead to the suspicion of suicide, possibly by hydrocyanic acid poisoning. On chemically examining the drinking vessels, no poison was detected, but there was still a possibility that the vessels may have been washed to remove any trace of poison, or that if hydrocyanic acid had been taken any remaining portion of the poison may have evaporated. As, however, no apparent reason existed to cause the couple to commit suicide, and as no posion was found on the premises, investigations were undertaken at my suggestion to ascertain the possibility of accidental death. It was clearly demonstrated by experiment that fumes could penetrate from other parts of the building into the flat occupied by the couple, and it was ascertained that, previous to the finding of the bodies a city firm had fumigated a room in the vicinity of the flat of the deceased. Although the fumigators had taken what they considered to be adequate precautions against the diffusion of the gas, the poison penetrated through cracks in the flooring with fatal results. The continued recurrence of fatalities of this kind makes it apparent that stringent regulations are necessary to control the use of this very dangerous substance as a fumigant.

A death in hospital occurred during the year in unusual circumstances. As a result of analysis of post mortem specimens, it was found that the viscera contained boron compounds, and, on inquiry, it was ascertained that the deceased was in the habit of taking considerable quantities of sodium bicarbonate for indigestion. An examination of the remainder of the substance which he had purchased from a grocer as sodium bicarbonate led to the discovery that the article supplied was borax. At the inquest which was held a verdict was returned attributing the death to disease of the stomach and heart, possibly accelerated by the taking of borax accidentally administered by himself in mistake for a medicinal dose of bicarbonate of soda.

Another case of interest was one in which a woman took a large amount of quinine, and although some days elapsed between the time of taking the drug and death, 0·01 grain of quinine was found in the stomach and contents, and 0·08 grain in the organs submitted.

The following are details of the results of analysis of viscera, blood and urine.

Nature of Exhibit.	Result of Examination.	Number of Cases.
Viscera	Negative for poisons	34
,,	Arsenic	1
,,	Atropine	1
,,	Bromural	1
,,	Chloral Hydrate and Opium	1
,,	Copper Sulphate	1
,,	Cresosote	1
,,	Cyanide	6
,,	Lysol	1
,,	Mercury	1
,,	Nitrobenzene (Oil of Mirbane)	1
,,	Phenobarbitone (Luminal)	2
,,	Strychnine	13
,,	Barbitone (Veronal)	1
Viscera and Blood	Negative for poison in viscera; positive for alcohol in blood	1
,, ,,	Negative for poison in viscera and for alcohol in blood	1
,, ,,	Positive for poison in viscera and for alcohol in blood	2
Viscera and Urine	Negative for poison in viscera; positive for alcohol in urine	3
Viscera, Blood and Urine	Negative for poison in viscera; positive for alcohol in blood and urine.	1
Blood	Positive for alcohol	5
,,	Negative for alcohol	1
Urine	Positive for alcohol	4
,,	Negative for alcohol	1
Urine and Blood	Positive for alcohol	2
,, ,,	Negative for alcohol	1
Blood	Positive for salt water drowning	2
,,	Negative for carbon monoxide	1
		90

Water and Sewages.—Departmental and municipal authorities submitted 380 samples of water in connection with the control and chemical treatment of country water supplies, swimming pools, etc., and 117 samples of sewage in connection with the supervision of sewage installations and the drainage and discharge of effluents and trade wastes into public places, etc.

The Second Government Analyst and the Senior Medical Officer of Health, in conjunction with the Officers of the Public Works Department, carried out systematic inspections of proposed water supply and sewerage sites. Inquiries and inspections have also been undertaken of existing water supplies and of sewage treatment plants, for various purposes.

Industrial Hygiene authorities submitted 211 specimens for examination in connection with claims under the Workers' Compensation Act, and the diagnosis of illness due to occupational causes. These included urine for examination as to the lead content; hair, nails and urine for determination of the arsenic content; air, clay, dust, fumes, etc., for examination in connection with enquiries in regard to conditions of employment; post mortem specimens (lungs) for examination *re* silicosis.

Miscellaneous authorities submitted 40 samples, embracing feathers, flock, medicine, food, pills, soil, animal viscera, etc.

Corrosion of Concrete Pipes.—At the request of the Director-General of Public Health, an investigation into the effect of fatty acid, carbonic acid and sulphuretted hydrogen on concrete pipes was undertaken. It was found that the lime contained in the cement used in making the concrete was attacked by carbonic acid and fatty acid. A complete report by the Second Government Analyst of the results obtained will be incorporated in the next annual report of this Branch.

Details of all samples received will be found in Tables I and II attached.

Two officers of this Branch, Dr. H. B. Taylor and Mr. R. G. O'Brien, acted on a scientific subcommittee constituted for the purpose of drafting methods for the sampling and analysis of purified feathers. All the chemical testing for the formulation of suitable methods was carried out in this Branch, and the methods recommended have now been adopted by the Standards Association of Australia.

During the year some improvement has been made in the Laboratory accommodation, but the position in this regard is still acute. A pressing need at the moment is the provision of a modern laboratory which can be used solely for toxicological purposes.

Some much needed apparatus has been added to the equipment of the Laboratory, and it is hoped that provision will be made annually on the Estimates for the purchase of new apparatus.

Owing to the increased number of samples taken for routine analysis, it has been possible to undertake very little research work of a systematic nature. At the present time, the Branch possesses only an incomplete knowledge of the composition of Australian natural products, and the variations thereof. This lack of knowledge seriously hampers the Analysts' work required in connection with the administration of the regulations of the Pure Food Act.

S. G. WALTON,
Government Analyst.

TABLE I.—Samples examined during the year 1936 for the purposes of the Pure Food Act, 1908.

Nature of Sample.	Submitted by.	Samples.	
		Number Examined.	Number Adulterated or Falsely Described
Aspirin Tablets	Food Inspeetors	10	1
Bacon	,, ,,	10	0
Baking Powder	,, ,,	18	0
Beer	,, ,,	32	5
Bread	,, ,,	38	8
Brine	,, ,,	9	7
Brushes	,, ,,	2	0
Butter	,, ,,	96	11
Cake	,, ,,	3	0
Camphorated Chalk	,, ,,	11	3
Castor Oil	,, ,,	9	0
Cheese	,, ,,	13	0
Cocoa	,, ,,	18	0
Cod Liver Oil and Malt Extract	,, ,,	6	0
Coffee, Coffee and Chicory, etc.	,, ,,	64	0
Confectionery	,, ,,	1	0
Cordials	,, ,,	165	36
Corks	,, ,,	7	0
Cream	,, ,,	169	2
,,	Milk Board	61	2
Dessert	Food Inspeetors	1	0
Diethylene Glycol	,, ,,	1	0
Dripping	,, ,,	4	1
Egg Pulp	,, ,,	1	0
Enamel Ware	,, ,,	21	0
Essences, Flavouring	,, ,,	17	2
Fish, Tinned, Smoked, etc.	,, ,,	65	3
Fish Paste	,, ,,	1	0
Flour	,, ,,	3	0
,, Self-raising	,, ,,	41	5
Hydrogen Peroxide	,, ,,	8	0
Ice Cream	,, ,,	211	20
Ices, Flavoured	,, ,,	21	0
Ice Cream Stabiliser	,, ,,	1	1
Icing Sugar	,, ,,	10	5
,, Mixture	,, ,,	34	3
Iodine Tineture	,, ,,	8	2
,, Paint	,, ,,	1	1
Fruit	,, ,,	42	4
Jams and Jellies	,, ,,	26	5
Jelly Crystals	,, ,,	1	1
Junket Tablets	,, ,,	3	1
Lard	,, ,,	4	0
Malt Extraet	,, ,,	7	3
Margarine	,, ,,	8	0
Meat, Fresh	,, ,,	922	78
Tripe, Fresh	,, ,,	811	11
Minced, Meat	,, ,,	1,673	137
	Municipal Inspectors, Country Districts	33	3
Sausages	,, ,, ,, ,,	67	6
,,	Food Inspeetors	3,171	129
Smallgoods	,, ,,	222	8
,,	Municipal Inspectors, Country Districts	10	0
Smoked Meat	Food Inspectors	7	5
Medicines, Patent	,, ,,	3	0
Menthol Liniment	,, ,,	1	1
Milk	,, ,, Metropolitan District	13,153	170
,,	Municipal and Shire Inspectors, Metropolitan District.	3,054	40
,,	Food Inspeetors, Country Districts	860	35
,,	Municipal and Shire Inspectors, Country Districts.	2,523	120
,,	Milk Board	3,488	60
,, Containers	Food Inspeetors	4	4
,, Condensed	,, ,,	12	0
Mustard	,, ,,	10	0
Ointment	,, ,,	1	0
Olive Oil	,, ,,	25	1
Paraffin, Liquid	,, ,,	10	0
Peanut Paste	,, ,,	1	0
Pepper	,, ,,	11	0
Pickles	,, ,,	41	5
Sauce	,, ,,	1	0
Soap	,, ,,	44	5
Spirits	,, ,,	4	2
Tomato Sauee	,, ,,	47	37
Seasoning	,, ,,	3	0
Trago A	,, ,,	1	0
Tripe Liquor	,, ,,	3	3
Vinegar	,, ,,	72	8
Vegetables	,, ,,	12	4
	Total	31,583	1,004

TABLE II.—Samples examined during the year 1936 for the Public Service of the State.

Authority Submitting.	Nature of Sample.	Number of Samples.
Subsidised Institutions.	Benzol	3
,, ,,	Blood (for lead)	1
,, ,,	Bread	4
,, ,,	Cattle Food	1
,, ,,	Cerebro-spinal Fluid	1
,, ,,	Clinic Emulsion	2
,, ,,	Clothing (*re* stains)	1
,, ,,	Ether	2
,, ,,	Ethyl Chloride	1
,, ,,	Flour	1
,, ,,	Junket Essence	1
,, ,,	Meat	95
,, ,,	Milk, Fresh	121
,, ,,	,, Human	43
,, ,,	Nails, Human	3
,, ,,	Powder (*re* lead)	1
,, ,,	Serum	1
,, ,,	Stomach Lavage	1
,, ,,	Vomit	1
,, ,,	Water (Deposit from)	1
Government Stores Department.	Acetic Acid, Glacial	1
,, ,,	Acetysalicylic Acid	4
,, ,,	Adrenalin Hydrocohloride	1
,, ,,	Ammonia, Aromatic Spirit of	1
,, ,,	Ammonium Acetate, Strong Solution.	2
,, ,,	A.P.C. Tablets	2
,, ,,	Arsenic Solution	1
,, ,,	Barium Sulphate	1
,, ,,	Belladonna	1
,, ,,	Biscuits	1
,, ,,	Bread	1
,, ,,	Buchu, Concentrated Solution	3
,, ,,	Calamine	1
,, ,,	Camphorated Oil	3
,, ,,	Cascara Sagrada	5
,, ,,	Chalk, Precipitated	2
,, ,,	Chalk, Prepared	1
,, ,,	Chicory	18
,, ,,	Chloroform	3
,, ,,	Cleansers, Liquid and Powder	11
,, ,,	Cod Liver Oil	1
,, ,,	Coffee	2
,, ,,	Collodion Flexile	1
,, ,,	Cornflour	1
,, ,,	Custard Powder	1
,, ,,	Digitalis, Concentrated Tincture.	1
,, ,,	Disinfectants	103
,, ,,	Ergot, Liquid Extract	1
,, ,,	Ether	3
,, ,,	Ethyl Chloride	2
,, ,,	Fuel Oil	5
,, ,,	Gentian, Compound Infusion	3
,, ,,	Gum Acacia	1
,, ,,	Helmets	1
,, ,,	Hyoscyamus, Concentrated Tincture.	1
,, ,,	Ice Cream	2
,, ,,	Ink and Ink Powder	29
,, ,,	Insecticides	9
,, ,,	Lanoline	1
,, ,,	Leather	1
,, ,,	Linoleum	1
,, ,,	Liquorice Extract	5
,, ,,	Lobelia, Ethereal Tincture	1
,, ,,	Lubricants	161
,, ,,	Magnesium Carbonate	3
,, ,,	Nitric Acid	1
,, ,,	Nux Vomica	1
,, ,,	Ointment	10
,, ,,	Olive Oil	3
Government Stores Department—*continued.*		
,, ,,	Paint	14
,, ,,	Paraffin, Liquid	3
,, ,,	Paraldehyde	2
,, ,,	Parrish's Food	1
,, ,,	Plate Powder	2
,, ,,	Polish, Metal	2
,, ,,	Potassium Bromide	1
,, ,,	,, Chlorate	1
,, ,,	,, Citrate	1
,, ,,	,, Hydroxide	1
,, ,,	,, Iodide	1
,, ,,	Senega, Concentrated Infusion	4
,, ,,	Sheeting	1
,, ,,	Soap	73
,, ,,	Soap, Liniment of	1
,, ,,	Sodium Acetate	1
,, ,,	Solder	3
,, ,,	Squill, Tincture of	4
,, ,,	,, Oxymel of	4
,, ,,	Strychnine, Solution of	4
,, ,,	Syrup, B.P.	1
,, ,,	Tar	1
,, ,,	Thermometers, Clinical	6
,, ,,	Tolu, Solution of	1
,, ,,	Tragacanth, Powder	1
,, ,,	Turpentine	2
,, ,,	Waterproof Material (Sheeting)	14
,, ,,	Wheatmeal	1
,, ,,	Distilled Water	1
,, ,,	Witch Hazel	2
,, ,,	Zinc Oxide	2
Pharmacy Board	Glycerine and Linseed	1
Police Department	Criminal Investigations	472
,, ,,	Animal Viscera	5
,, ,,	Human Viscera	90
Departmental and Other Authorities.	Waters	380
,, ,,	Sewages	117
Industrial Hygiene Authorities.	Air	3
,, ,,	Clay (China making)	15
,, ,,	Dust	1
,, ,,	Fumes	5
,, ,,	Hair (Human)	17
,, ,,	Nails (Human)	6
,, ,,	Ointment	1
,, ,,	Post Mortem Specimens (Human).	9
,, ,,	Powder used in iron moulding	1
,, ,,	Skin (Human)	2
,, ,,	Trichlorethylene	1
,, ,,	Urine	149
,, ,,	Wool	1
Miscellaneous Authorities.	Clay (*re* earth eating children)	1
,, ,,	Concrete Sewage Pipes	7
,, ,,	Crayons	1
,, ,,	Cream	1
,, ,,	Documents *re* Legal Action	2
,, ,,	Feathers	10
,, ,,	Flock	3
,, ,,	Jam	1
,, ,,	Kapok	5
,, ,,	Medicine	1
,, ,,	Pills	1
,, ,,	Soil	3
,, ,,	Viscera (Animal)	1
,, ,,	Wadding	2
,, ,,	Wallpaper	1
	Total	2,175

APPENDIX.

Experiments undertaken to (1) Ascertain the loss in weight of milk in passing over a water and brine cooler, and the further loss in pasteurising the same milk and again passing over the same cooler. (2) Ascertain the weight of one gallon of milk at varying temperatures.

The experiments were carried out on the premises of the Dairy Farmers' Co-operative Milk Co. Ltd., 700 Harris-street, Sydney, by Mr. R. G. O'Brien, Assistant Government Analyst, in conjunction with the Chief Food Inspector, Health Department, an officer of the Weights and Measures Department, and officers of the Dairy Farmers' Co-operative Milk Co. Ltd.

The following are the details of the experiments :—

Experiment 1.

Experiment undertaken to ascertain the loss in weight of milk in passing over a water and brine cooler, and the further loss in pasteurising the same milk and again passing over the same cooler. (Approximately 500 gallons of milk were used for the experiment.)

Date of Experiment	12th October, 1936.
Time of Experiment	Noon to 7·15 p.m.
Temperature	Varying from 64·0° F. to 60·7° F.
Humidity	Ranging from 66 to 84 per cent.

Apparatus Used.—The apparatus used in the experiment was as follows :—

(1) A Platform Weighing Machine (to weigh to 1,000 lb. with an accuracy of $\frac{1}{4}$ lb.)
(2) An Internal Coil Pasteuriser—capacity 940 gallons—fitted with a lid.
(3) A Vertical Coil Water and Brine Cooler, having 6 water-cooled coils and 6 brine-cooled coils, fitted with metal shields to avoid splashing. The approximate dimensions of the cooler were 12 ft. by 10 ft.
(4) A thermometer graduated from 30° F. to 150° F. having an N.P.L. certificate of accuracy to 0·1° F.

Description of Experiment.—Approximately 500 gallons of milk were received in 50 10-gallon cans at noon. To each can was affixed an identification tag bearing a number, the cans being numbered from 1 to 50 consecutively. The cans as received were then weighed in batches of 6, with the exception of the last 2 cans which were weighed together. Nine separate weighings were required, the gross weight being 6,535$\frac{1}{4}$ lbs. Particulars as to weights are given in the table below, column 1. The temperature of the milk at the time of weighing was 55° F., taken with a thermometer having a N.P.L. certificate.

The milk was then carefully tipped by hand into the tank of the pasteuriser, and allowed to gravitate through approximately 4 ft. of 3-inch pipe, and then through approximately 15 ft. of 2-inch pipe, over the water and brine cooler. The milk after cooling was found to have a temperature of 34° F., and was received from the cooler in the original 50 cans. As froth was generated by the cooling treatment, it was found that an extra can, marked No. 51, was necessary to hold the whole of the milk coming from the cooler.

After emptying the milk into the tank of the pasteuriser, the empty cans were weighed in the same batches as originally, and were found to have a gross weight of 1,388$\frac{3}{4}$ lbs., nine separate weighings being again made. Can No. 51, when empty, was weighed and was found to weigh 27$\frac{1}{4}$ lbs. Particulars as to weights are given in the table below, column 2.

The net weight of the milk used in the experiment amounted to 5,146$\frac{1}{2}$ lbs. Particulars as to weights are given in the table below, column 3.

The pipe line from the tank to the cooler was disconnected and drained after the milk had ceased to flow. The milk thus obtained was placed in can No. 51. The pipes of the water and brine cooler were then disconnected, and steam forced into them in order to collect any milk adhering to the cooler in the form of ice. Each observer at this stage of the experiment was satisfied that no further milk could be collected from the system.

The whole of the 51 cans with their contents were then weighed in the same batches as originally, and were found to have a gross weight of 6,546$\frac{1}{2}$ lbs. Ten separate weighings were made. The gross weight of the empty cans in this section of the experiment was found to be 1,416 lbs. The net weight of the milk, therefore, received from the cooler amounted to 5,130$\frac{1}{2}$ lbs. this represented a loss of 16 lbs., or 0·31 per cent. by weight of the milk used in the experiment. Particulars as to weights of milk received from the cooler will be found in the table below, column 4.

The cooled milk was again carefully tipped by hand into the pasteurising tank, mixed by revolving the internal coil, and a 1-lb sample of the mixed milk was withdrawn for the purposes of analysis. The analysis is given below. The lid of the pasteuriser was then closed, and the milk brought to a temperature of 145° F. and held at this temperature for 30 minutes. The milk was then cooled in the tank to 120° F. and allowed to gravitate as before through the same pipe line system over the vertical water and brine cooler, which was adjusted to permit of the milk being received from the cooler at a temperature of 40° F. The milk was received from the water and brine cooler in the original 50 cans. The use of Can No. 51 was discontinued at this stage as the froth was not so troublesome. A 1-lb sample of the pasteurised milk was withdrawn for the purposes of analysis. The analysis is given below. The pipe line was disconnected and drained as before, and the milk adhering to the water and brine cooler in the form of ice was also collected, each observer being satisfied that no further milk could be collected from the system.

The whole of the 50 cans with their contents were weighed in the same batches as originally, and were found to have a gross weight of 6,468$\frac{3}{4}$ lbs. Nine separate weighings were made. The gross weight of the empty cans in this section of the experiment was found to be 1,388$\frac{3}{4}$ lbs. The net weight of the milk, therefore, received from the pasteuriser and the cooler was 5,080 lbs. This represented a loss of 66$\frac{1}{2}$lbs. on the weight of the milk originally taken for the experiment. Particulars as to weights of milk received

from the pasteuriser and the cooler will be found in the table below, column 5. As 2 lbs. of milk were withdrawn for the purposes of analysis, the net loss in cooling 5,146½ lbs. of milk of a temperature of 55° F. to a temperature of 34° F., and then pasteurising and holding the same milk for 30 minutes at a temperature of 145° F. and again cooling it to 40° F. amounted to 64½ lbs. or 1·25 per cent. by weight of the milk used.

Summarised, the result of the experiment is as follows :—

The following is a summary of the weights observed.

Milk received at a temperature of 55° F.—

Weight of cans plus milk	6,535¼ lbs
Weight of cans	1,388¾ lbs.
Net weight of milk	5,146½ lbs.

Milk after cooling to 34° F.—

Weight of cans plus milk	6,546½ lbs.
Weight of cans	1,416 lbs.
Net weight of milk	5,130½ lbs.
Loss in weight of milk after cooling from 55° F. to 34° F.	16 lbs. (0·31 per cent.).

Milk after pasteurising and holding at 145° F. for 30 minutes, and cooling to 40° F.—

Weight of cans plus milk	6,468¾ lbs.
Weight of cans	1,388¾ lbs.
Net weight of milk	5,080 lbs.
Add 2 lbs. taken for analysis	2 lbs.
	5,082 lbs.
Loss in weight of milk after pasteurising and holding at 145° F. for 30 minutes, and cooling to 40° F.	48½ lbs. (0·94 per cent.).

The loss in weight of milk after cooling from 55° F. to 34° F., pasteurising and holding for 30 minutes at 145° F., and cooling to 40° F., was found to be 64½ lbs., or 1·25 per cent. by weight.

TABLE OF WEIGHTS.

Can Nos.	Weight of Cans plus Milk as Received.	Weight of Empty Cans.	Net Weight of Milk.	Weight of Cans plus Milk.	
				After Cooling to 34° F.	After pasteurising and cooling to 40° F.
	lbs.	lbs.	lbs.	lbs.	lbs.
1– 6	783½	165½	618	774½	735½
7–12	785	166½	618½	764¼	763
13–18	779½	164	615½	771½	777
19–24	785½	165¾	619¾	787	764½
25–30	786	168½	617½	781	795
31–36	785	167	618	790½	780
37–42	785	168¾	616¼	788	792½
43–48	785	167½	617½	773¾	792¼
49–50	260¾	55¼	205½	228½	269
Total	6,535¼	1,388¾	5,146½	6,459	6.468¾
Extra Can No. 51 ...	.....	27¼	.....	87½	.....
Gross Total ...	6,535¼	1,416	5,146½	6,546½	6,468¾

The following are the analysis of the two 1-lb. samples of milk withdrawn:—

	Raw Milk.	Pasteurised Milk.
Total solids	12·21 per cent.	12·31 per cent.
Milk-fat	3·5 „	3·55 „
Solids-not-fat.....	8·71 „	8·76 „
Freezing point	— 0·54 deg. C.	— 0·545 deg. C.

The increase shown above in the total solids content of the pasteurised milk represents a gain of 0·81 per cent.

Experiment 2.

Experiment undertaken to ascertain the weight of 1 gallon of milk at varying temperatures.

Date of experiment	13th October, 1936.
Time of experiment	10 a.m. to 1 p.m.
Temperature	Varying from 68·0 deg. F. to 69·2 deg. F.
Humidity	Ranging from 55·0 to 61·0 per cent.

Five gallons of pasteurised milk of the following composition :—

Total solids	12·31 per cent.
Milk-fat	3·55 per cent.
Solids-not-fat	8·76 per cent.
Freezing point	—0·545 deg. C.

were placed in a certified 5-gallon metal measure, and weighed on a balance supplied by the Weights and Measures Department having an accuracy of 2 grains.

The temperature of the milk at the time of the weighing was 42·5 deg. C., taken with a standard thermometer having an N.P.L. certificate of accuracy. The following are the weights noted :—

	lbs.	ozs.	drs.	grs.
Weight of measure plus milk	79	1	2	18
Weight of measure	27	5	15	6
Weight of milk	51	11	3	12

The weight of one gallon of milk, therefore, was 10 lbs. 5 ozs. 7 drs. 2 grs.

The milk was then warmed to 55 deg. F., the volume adjusted to exactly 5 gallons, and the experiment repeated. The following are the weights noted :—

	lbs.	ozs.	drs.	grs.
Weight of measure plus milk	78	15	13	14
Weight of measure	27	5	15	6
Weight of milk	51	9	14	8

The weight of one gallon of milk, therefore, was 10 lbs. 5 ozs. 2 drs. 23 grs.

The milk was warmed to 77·5 deg. F., the volume adjusted to exactly 5 gallons, and the experiment repeated. The following are the weights noted :—

	lbs.	ozs.	drs.	grs.
Weight of measure plus milk	78	12	13	14
Weight of measure	27	5	15	6
Weight of milk	51	6	14	8

The weight of one gallon of milk, therefore, was 10 lbs. 4 ozs. 9 drs. 7 grs.

Note.—The British Imperial gallon of water weighs exactly 10 lbs. at 62 deg. F.

PURE FOOD ACT, 1908.

REPORT OF THE CHIEF INSPECTOR ON THE GENERAL ADMINISTRATION OF THE PURE FOOD ACT, 1908, FOR THE YEAR ENDED 31st DECEMBER, 1936.

Staff.

Chief Inspector, C. V. Francis, M.R. San. I.; Senior Inspector, G. A. Griffin; 11 Metropolitan Inspectors; 2 Country Inspectors, and 1 Assistant.

I submit herewith particulars of the work performed by the staff of the Pure Food Branch for the year ended 31st December, 1936. This work includes the supervision of all places where food or drugs are prepared, stored, or exposed for sale, together with the incidental duties necessary to be carried out in order to secure the wholesomeness, cleanliness, and freedom from contamination of food and drugs, and compliance with the legal provisions, as set out in the Act and Regulations thereunder.

Milk.—As usual considerable attention was given to this important food; and it is satisfactory to note that of the 14,104 samples submitted for analysis, 202 only (slightly over 1·4 per cent.) were below the prescribed standard.

In connection with the collection of samples by local authorities, it was found necessary during the year to call upon them to increase the number of samples submitted, as those received from some districts were considered insufficient for maintenance of an effective supervision over the sources of supply. Milk samples received from local authorities decreased from 5,218 in 1933 to 4,811 in 1934; and to 4,460 in 1935. As a result of departmental action the number was increased to 5,401 in 1936, or nearly a thousand samples more than were received from this source in 1935.

A lengthy investigation into the milk supply of Sydney was made in 1936 by a Commissioner (Mr. E. H. Swift, M.A.) specially appointed to inquire into it; and officers of this Department were called upon for evidence on several occasions.

Cream.—163 samples of cream collected and submitted for analysis were found to conform to the prescribed standard.

A trader from another State attempted to place on the Sydney market a processed mixture called "Dairy Desert," which was stated to contain cream, gelatine and sugar; and to look, if anything, superior to pure cream. As this mixture contained only 25 per cent. milk fat, as against the 35 per cent. content of ordinary cream, the maker was informed that the mixture must conform to the standard for cream under the Pure Food Act. He then decided not to attempt to market it in this State. In my opinion the public would have been deceived by the appearance of the mixture, and its sale would have been likely to decrease the sale of pure (35 per cent.) cream.

Meat.—Throughout 1936 constant supervision was exercised over butchers for the purpose of suppressing the addition of preparations of sulphurous acid to fresh meat. Of 6,896 samples submitted for analysis 259 were found to have been treated with this prohibited preservative. 178 prosecutions were instituted, and fines and costs amounting to £381 18s. imposed. Some of the charges were laid as second offences with the object of making traders realise through the imposition of heavier penalties how seriously the department regards this continued adulteration of a most important food.

Butter.—Ninety-three samples were examined from various parts of the State, and several traders were prosecuted for selling butter containing excess water. One large packer has recently installed a butter-blending vacuum-process machine which is claimed to improve, among other things, the "spreadability" of butter. In the processing a considerable quantity of water is added to much of the butter received from country factories which frequently contains less water than the prescribed maximum of 16 per cent. The additional water added in the processing is the factor in the increase of "spreadability;" and strict supervision is being exercised to prevent the sale of butter containing excess moisture.

Bread.—There have been several convictions for sale of "wholemeal" or "wheatmeal" bread which was found on analysis to contain an excess of white flour.

Representations are made to this Department from time to time by Women's organisations and others for the compulsory wrapping of bread. So far no regulation for this purpose has been issued; but a continuous supervision is exercised over bread-making establishments, and prosecutions are instituted whenever any carelessness or laxity is found in protecting the bread-supply from contamination by flies and dust. During the last ten years very considerable improvements have been made in the methods of bread delivery.

Canned Salmon.—A wholesale dealer in canned salmon who was found to have "Red Cutlet" labels on cans marked "P," (indicating the inferior and cheaper pink salmon); and who had effected several sales of the wrongly labelled grades, was fined £15 with costs for selling fish which was falsely described. There is a difference of about 7d. per lb. tin in the retail selling prices of ordinary brands of red and pink salmon.

Many warnings have recently been issued to traders for inaccurate descriptions of salmon in their window displays. By an arrangement with the Canadian Government cans are branded in accordance with the grade of fish they contain; and the labelling of cans in the same way would be in the public interest.

Cheese.—Following a complaint of the finding in processed cheese of what appeared to be pieces of glass, samples of the cheese were obtained and analysed, and the glass-like crystals proved to be lactose. No reason could be found for the formation of these crystals in this particular batch of cheese, some of which had been distributed to other States.

Cordials and Syrups.—Six prosecutions were instituted and convictions obtained for sale of cordials containing insufficient fruit juice. Fines and costs imposed amounted to £18 4s.

Ice Cream, Flavoured Ices, etc.—Of 236 samples submitted for analysis, 13 were found not to comply with the standard. In 10 cases of minor default warnings were issued; and three traders were prosecuted, fines and costs imposed amounting to £6 4s.

Contamination of Food.—There have been several recent instances of the finding of foreign material in food, where it could only have become embedded during the process of manufacture, as for instance :—

Two cockroaches in a loaf of bread; a cattle tick in a saveloy (probably from an animal from Queensland or the North Coast); a rubber finger stall in a fancy cake.

These happenings can only result from laxity or carelessness on the part of traders or their employees.

Tomato Pulp and Sauce.—At one factory over 24½ tons of newly made tomato pulp, which was in a deteriorated condition, was seized and destroyed. It is found that continual attention is necessary over the quality of the tomatoes used for sauce making, and the methods of preparing them. Although there has been considerable improvement in handling, conditions are still far from satisfactory as is evidenced by the high mould-counts in the sauces examined by the Chemical Laboratory.

Foods (other than Milk) and Drugs submitted for Examination. — In the table on page 17 giving "*Particulars of Adulterations*" will be found a list of the wide range of foods and drugs which were submitted for analysis by officers of this branch during 1936. Prosecutions undertaken in connection with adulterated samples are summarised in the tables below.

Disinfectants.—A determined effort was made during the year to enforce the labelling requirements for disinfectants. The regulations require that every package of disinfectant shall bear a label specifying the manner of use, and the proportion in which it is to be used to be effective as a disinfectant or germicide. This matter should very shortly be on a satisfactory footing, as most traders are now acquainted with the provisions of the Regulation.

Inspections of Premises used for the Preparation, Sale or Storage of Food.—In 1936 inspections were made of 11,089 food premises in various parts of the State. Prosecutions for failure to keep premises clean numbered 19, and fines and costs amounting to £70 2s. were imposed.

Quackery, Advertising of Nostrums and Patent Medicines.—There was a considerable number of inquiries in connection with these subjects during 1936; and the department is greatly in need of increased powers for control over advertisements making claims of an extravagant nature in regard to cures. Until it is supplied with such powers the department is hampered in its endeavours to carry out work in the public interest that has been long delayed.

"*Iodine Lockets.*"—Several shops were found to be selling Iodine Lockets at 2s. 6d. each. These were small containers made of celluloid or similar material to be worn round the neck; in an advertisement issued with the locket it was claimed that the wearer could laugh at rheumatism, 'flu colds, hay fever, debility, and all run down conditions. The material in each locket was probably not worth a penny. All the lockets were seized and removed from the market.

Legal Proceedings.—A total of 400 prosecutions were undertaken in 1936, the fines and costs amounting to £964 10s.; of the prosecutions 394 were under the "Pure Food Act, 1908" and these fines and costs totalled £936 2s.

There were 6 prosecutions under 4 other Acts (Venereal Diseases Act, 1918 (2); Nurses Registration Act (2); Opticians Act (1); Metropolitan Meat Industry Act (1); and fines and costs of £28 8s. were imposed.

Summary Statement of Work carried out under the Pure Food Act from 1909 *to* 1936 *inclusive.*—For convenient reference a record is attached of the work carried out by the Pure Food Branch each year from 1909 to 1936 inclusive.

C. V. FRANCIS,
Chief Inspector, Pure Food Act.

TABLE I.—Summary of Work performed by Pure Food Officers for the year ended 31st December, 1936.

Analysis of Samples of Milk.	Samples taken by— Departmental Officers.	Municipal and Shire Council Inspectors.	Total.
Number of samples taken from all parts of the State	14,104	5,401	19,505
Number of samples below standard	202	139	341
Number of warnings	81	55	136
Number of prosecutions	121	84	205
Amount of fines and costs	£ s. d. 316 5 0	£ s. d. 189 5 6	£ s. d. 505 10 6

Foods and Drugs, other than Milk.

Number of samples taken from all parts of the State	8,491
Number of samples below standard	417
Number of warnings	208
Number of prosecutions	209
Amount of fines and costs	£439 3s.

Food unfit for Consumption, Seized and Destroyed.

The seizures comprised over 110 tons of foodstuffs, and 44,175 packages of assorted food and drugs.

Number of prosecutions	1
Amount of fines and costs	£15 8s.

Inspection of Premises used for Preparation, Sale, or Storage of Food.

Number of premises inspected in all parts of the State	11,089
Number of notices issued	589
Number of prosecutions	19
Amount of fines and costs	£70 2s.

TABLE 2—Summary of Legal Proceedings, 1936.

	Prosecutions.	Fines and Costs. £ s. d.
Breaches of Pure Food Act, 1908, and Regulations—		
Adulterated milk	121	316 5 0
Adulterated foods and drugs	209	439 3 0
Food unfit for human consumption seized and destroyed	1	15 8 0
Unclean premises	19	70 2 0
General breaches	44	95 4 0
Breaches of Metropolitan Meat Industry Act	1	12 10 0
Breaches of Nurses Registration Act	2	2 16 0
Breaches of Opticians Act	1	6 6 0
Breaches of Venereal Diseases Act and Regulations	2	6 16 0
Grand Total	400	964 10 0

TABLE 3.—Summary of work carried out by Pure Food Officers under the Pure Food Act, 1908, from the date of its operation (October, 1909) to 31st December, 1936.

	No. of Premises inspected.	Total Number of Samples taken.	Total below Standard.	Prosecutions undertaken.	Amount of Fines and Costs. £ s. d.
Premises inspected	222,937	...	...	2,373	12,003 18 6
General breaches of Act	...	...	...	1,771	5,716 10 6
Milk samples	...	202,659	8,203	4,309	19,825 11 1
Food and drug samples	...	56,311	7,759	4,334	13,474 0 6
Food and drug seizures	...	...	...	84*	1,723 8 4
Total	222,937	258,970	15,962	13,397	52,743 8 11

* 1926–1936.

Summarised Return showing the Work carried out by Departmental Food Inspectors under the Pure Food Act, 1908, from 1st October, 1909, to 31st December, 1936, inclusive.

Year.	Milk Samples.				Samples of Food and Drugs (other than Milk).				Premises inspected.		
	No. of samples collected.	No. below Standard.	No. of Prosecutions.	Amount of Fines and Costs.	No. of Samples collected.	No. below Standard.	No. of Prosecutions.	Amount of Fines and Costs.	No. of Inspections made.	Prosecutions for Dirty and Unclean Premises.	Amount of Fines and Costs.
				£ s. d.				£ s. d.			£ s. d.
1909–10 ...	2,155	279	185	860 5 7	391	49	41	150 4 0	802	46	94 14 6
1911	1,963	248	132	829 9 6	830	245	171	451 0 6	929	50	235 12 0
1912	2,990	436	210	1,124 4 0	593	71	71	148 17 0	982	88	305 1 2
1913	3,519	322	144	709 17 0	641	107	72	174 12 6	2,660	93	382 7 6
1914	3,980	291	189	837 11 0	734	135	71	321 4 0	3,953	152	638 15 6
1915	4,338	312	196	803 17 0	572	69	31	149 6 0	3,561	71	284 9 6
1916	3,013	230	115	496 17 0	557	172	50	235 12 0	4,731	95	493 1 6
1917	3,241	268	122	598 15 0	449	139	58	118 6 0	5,997	166	811 12 5
1918	4,015	371	159	774 6 0	456	131	25	48 4 6	5,785	106	686 5 11
1919	3,592	476	178	970 19 0	822	205	41	172 14 0	5,330	38	239 3 6
1920	6,022	536	243	1,697 10 0	1,080	207	19	65 15 0	9,159	107	449 16 6
1921	7,865	263	146	846 5 0	888	169	20	69 2 0	10,621	109	574 4 0
1922	6,702	399	140	685 12 6	758	121	17	47 3 0	9,246	111	587 12 0
1923	8,485	414	201	1,043 5 6	415	168	55	132 13 0	10,681	159	821 18 6
1924	8,805	327	149	747 13 0	834	166	93	348 2 0	12,188	112	703 0 6
1925	8,640	344	163	744 6 0	1,082	256	99	317 4 0	12,196	106	573 11 0
1926	9,745	353	186	750 6 0	1,170	182	154	400 8 0	11,370	70	340 18 0
1927	8,289	295	168	752 2 0	1,449	231	213	726 4 0	10,729	84	492 16 0
1928	9,694	268	166	888 13 0	2,022	397	355	1,203 17 0	10,177	92	598 18 0
1929	7,993	214	133	572 8 0	2,576	518	473	2,317 1 0	11,564	221	1,321 4 0
1930	10,439	320	188	754 18 0	2,326	259	249	807 7 0	12,181	149	773 11 6
1931	12,439	234	125	398 11 0	3,466	491	376	1,036 11 0	12,751	51	214 16 0
1932	10,987	220	158	404 4 0	3,962	753	328	738 9 0	11,553	19	86 12 0
1933	14,146	234	167	562 0 0	4,638	576	410	871 14 0	9,571	12	47 10 0
1934	13,119	153	108	332 6 0	7,298	913	475	1,236 16 0	11,431	30	107 5 0
1935	12,379	194	117	323 5 0	7,811	612	358	746 11 0	11,700	17	69 0 0
1936	14,104	202	121	316 5 0	8,491	417	209	439 3 0	11,089	19	70 2 0
Total ...	202,659	8,203	4,309	19,825 11 1	56,311	7,759	4,334	13,474 0 6	222,937	2,373	12,003 18 6

General Breaches of Act and Regulations.

Year.	No. of Breaches.	No. of Prosecutions.	Fines and Costs.
			£ s. d.
1909–10	47	36	63 9 0
1911	67	26	57 11 0
1912	72	60	114 8 6
1913	65	40	127 0 6
1914	71	42	167 7 6
1915	80	55	163 15 6
1916	90	21	154 8 6
1917	137	47	376 16 2
1918	200	131	375 12 10
1919	...	60	274 2 8
1920	...	83	368 2 0
1921	...	113	634 10 4
1922	...	72	252 19 0
1923	...	119	293 4 0
1924	...	47	185 1 6
1925	...	66	224 5 6
1926	...	64	197 4 0
1927	...	153	286 7 0
1928	...	96	330 0 0
1929	...	74	272 7 0
1930	...	60	167 9 0
1931	...	43	81 4 0
1932	...	28	53 19 0
1933	...	32	65 2 0
1934	...	67	106 6 0
1935	...	92	228 14 0
1936	...	44	95 4 0
Total	...	1,771	£5,716 10 6

Summary of Legal Proceedings, 1909 to 1936.

Year.	No. of Prosecutions.	Fines and Costs.
		£ s. d.
1st October, 1909–31st December, 1910	281	1,168 13 1
1911	379	1,573 13 0
1912	439	1,693 10 8
1913	349	1,393 17 6
1914	454	1,964 18 0
1915	369	1,561 10 0
1916	371	1,457 8 0
1917	513	2,162 17 7
1918	468	2,198 9 3
1919	338	1,896 14 2
1920	452	2,581 3 0
1921	388	2,124 1 4
1922	340	1,573 6 6
1923	562	2,430 11 0
1924	401	1,983 17 0
1925	455	1,948 6 6
1926	499	1,785 0 0
1927	635	2,350 9 6
1928	720	3,080 0 0
1929	910	4,532 12 4
1930	652	2,525 13 6
1931	601	1,754 10 0
1932	534	1,285 12 0
1933	622	1,549 14 0
1934	682	1,805 9 0
1935	589	1,425 10 0
1936	394	936 2 0
Total	13,397	52,743 8 11

Deteriorated Food and Drugs seized and destroyed.

Year.	No. of Prosecutions.	Fines and Costs.
		£ s. d.
1909–25	(Detailed figures unprocurable)	1,278 4 4
1926	25	96 4 0
1927	17	93 0 0
1928	11	58 12 0
1929	9	49 12 0
1930	6	22 8 0
1931	6	23 8 0
1932	1	2 8 0
1933	1	3 8 0
1934	2	22 16 0
1935	5	58 0 0
1936	1	15 8 0
Total	84	1,723 8 4

ANNUAL REPORT OF THE ACTIVITIES OF THE SANITARY BRANCH DURING THE YEAR ENDED 31ST DECEMBER, 1936.

The Staff of the Branch now comprises.—A Chief Inspector, Mr. G. A. Garrow, M.R.San.I.; a Senior Inspector, Mr. S. L. Parsons; 10 certificated inspectors, and 1 certificated inspector and licensed surveyor.

On the retirement of Dr. J. S. Purdy from the Office of Metropolitan Medical Officer of Health in June, 1936, Inspectors Parsons and Wormold, who for some years had been attached to his staff, housed at the Sydney Town Hall, were transferred to the Head Office.

Inspector Guy was allocated to the office of the Medical Officer of Health at Newcastle to replace Senior Inspector Meddows who resigned to accept an appointment as Chief Inspector to the Newcastle City Council.

Messrs. Roach and Holtsbaum were appointed to fill vacancies, and entered on duty during the year.

As mentioned in previous reports the supervisory work of the Branch has changed considerably in recent years, becoming progressively more advisory in character in connection with industrial and technical developments.

Routine and General Inspections, etc.

Country Towns.—Five primary inspections, and 63 re-inspections were made of country towns, and recommendations for necessary action were forwarded to the respective local authorities. Re-inspections are made from time to time to ensure that departmental recommendations are given effect to by local authorities. As a result of the inspections several councils appointed qualified health inspectors.

Insanitary Buildings.—Inspections were made of 273 buildings (including 8 boarding houses). In 61 instances the conditions of the buildings were such as to warrant the issue of closing order certificates, and the councils concerned were requested to take action to close the buildings. In other cases the councils were informed of the improvements considered necessary to place the buildings in a habitable condition.

Shop premises.—Inspections were made of 98 shop premises (butchers, grocers, chemists, etc.). In every instance where improvements or alterations were found necessary the councils were requested to take action. In a few cases prosecutions were instituted.

Two private water supplies used in connection with the manufacture of food were closed, as examination of the water indicated that it was unfit for human consumption.

Barbers' Shops.—Inspections were made of 77 barbers' shops to ascertain the condition of the premises and the arrangements for sterilizing the instruments, and for arresting bleeding, etc. When conditions were not satisfactory, warning notices were issued, or prosecutions undertaken.

Private Hospitals—Public and Private Schools, etc.—Inspections were made of 85 separate premises, and reports and necessary recommendations submitted.

Public Halls and Theatres.—Sixty-six premises were inspected and reports and recommendations submitted, 15 air-tests were made, and an examination was made of plans for several premises.

Hotel Premises.—One hundred and sixty-four hotels were inspected, and reports and recommendations submitted to the licensing authorities.

Officers of this Branch are frequently called upon to give expert advice both in and out of court concerning proposed new buildings; alterations and repairs to existing buildings; practicability of providing septic tank installations, etc.; and attention is at all times given by the Branch to the raising of hotel premises to reasonably good standards; and whenever necessary assistance is afforded licensing authorities for this purpose. On five occasions officers of the Branch attended the Licensing Court and gave expert evidence.

Swimming Pools.—Inspections were made of 56 swimming pools and treatment plants, and samples of water were procured and submitted for chemical and bacteriological examination. Several additional pools have been constructed. Upon establishment of a new pool an officer is sent from this Branch to instruct the person in charge in regard to maintenance of the pool, and care of the premises, purification plant, etc.; and in the method of collecting and transmitting water samples to the Chemical and Microbiological Laboratories for examination, etc.

Cattle Slaughtering and Diseased Animals and Meat Act, 1902.—Inspections were made of 244 slaughtering premises in 1936, and reports and recommendations forwarded to the respective local authorities. Several plans of sites for proposed slaughtering premises (including an abattoir) were inspected and reported upon.

Provision for Meat Inspection in Country Districts.—Where such appointments desirable, local authorities are recommended to take advantage of the amendment of Section 15 of the Cattle Slaughtering Act by which they are enabled to provide for payment of a qualified inspector from the inspection fees collected. Inquiries are made by this Branch concerning fees before submission of a scale of fees for approval and gazettal.

Noxious Trades Act, 1902.—Over 1,000 premises are now registered under this Act the provisions of which are gradually being extended to additional areas. Several plans of proposed new premises and installations were examined and reported on in 1936. Inspections were made of 852 licensed premises, and reports and necessary recommendations made to the respective local authorities. Several complaints that unregistered premises were being used for the carrying on of noxious trades were investigated; and where necessary legal proceedings instituted.

Although noxious trade premises and trade processes have been greatly improved in recent years, more constant supervision is found necessary over these premises, which are widely dispersed, than is possible by the one inspector at present allocated to this duty. Laxity on the part of some of the local authorities in administering the Act is the reason that unsatisfactory conditions are found at some premises; and the Department is urging these authorities to give greater attention to noxious trades premises in their districts. The Department has under consideration the question of cancellation of the licenses of traders who continually conduct their business in an unsatisfactory manner.

Removal of Dead Stock from Flemington.—Over 14,000 dead animals were removed from the Flemington Sale Yards and Trucking Yards in 1936. No complaint was received in connection with such removals, which are carried out by a private firm.

Flock and Bedding Material.—Samples of rags, flock and bedding materials were obtained for examination, and in the course of such collections inspections were made to ascertain the condition of the work premises. There appeared to be a definite improvement in the class of materials used for flock making, but in some instances it was necessary to take action in respect of materials that did not comply with the standard.

Camps, Recreation and Show Grounds, Racecourses, Cemeteries, etc.—During the year sixty-seven inspections were made; and where necessary reports and recommendations were submitted to the controlling authorities.

Sale Yards.—Thirty-three inspections were made of sale yards; and three sites of proposed sale yards were inspected for the purpose of advising councils and others concerned on the suitability or otherwise of the sites.

Sanitary Depots and Proposed Sites.—Two hundred and twenty-six inspections of depots were made and reports and recommendations submitted. In some instances legal proceedings were instituted against sanitary contractors. Thirty-three proposed depot sites were inspected, and twenty-three recommended for approval. In seven instances approval of other than trench disposal methods was recommended. Eighteen complaints were investigated concerning unsatisfactory disposal of nightsoil and garbage.

Scavenging Districts.—Thirty-seven descriptions of proposed boundaries were examined, and twenty-four recommended for approval.

Septic Tanks and Sewage Treatment Works.—Three hundred and forty-one plans of proposed septic tanks were examined. Inspections were made of 106 sites, and reports and recommendations submitted. Amendment of the plans was necessary in the majority of cases as the design, or capacity submitted, could not be recommended. In a few cases proposed installations were not recommended owing to unsuitability of the site.

Two hundred and six inspections of septic tanks and effluent disposal areas were made. In several instances it was found necessary to require that the installation should be placed in a satisfactory working condition.

Six inspections were made of sewage treatment works.

Public and Private Water Supplies.—Thirty-two investigations were made, and where necessary samples were procured for examination. Two private wells in which the water was found to be unfit for human consumption were closed. Twenty-four investigations were made concerning alleged polluted watercourses, and action taken where necessary.

Collection of Samples of Water, Sewage Effluents and Soils for Chemical and Bacteriological Examination.—Two hundred and twenty-four samples of water, seventeen of sewage, and three samples of soil were obtained during the year and submitted for chemical analyses or bacteriological examination.

Garbage Disposal.—Where any tip is found in an undesirable condition action is taken to ensure improvement. Where there is likelihood of a tip being used later for building sites, action is taken under Section 55 of the Public Health Act, 1902, for issue of a Notice declaring the land unfit for building purposes.

In three districts the conditions found were so unsatisfactory that notices under Section 3 of the Public Health (Amendment) Act, 1915, were served on the respective local authorities requiring the installation of a garbage removal service. Action is also taken to ensure provision of suitable garbage disposal depots.

Garbage Incinerators.—Thirty-two inspections and reports were made concerning incinerators. Several councils have under consideration the erection of incinerators.

Unhealthy Building Land.—One hundred and twelve inspections and fifty-one surveys were made of land considered to be unfit for building purposes; thirty-five plans and sketches were prepared, and four notices were gazetted under Section 55 of the Public Health Act, 1902. One notice was revoked, the land having been made fit for building purposes. Fees at 2s. 6d. each amounting to £327 15s. were received in connection with 2,622 inquiries from solicitors and others regarding Notified land.

Infectious Diseases.—Twenty-eight investigations of infectious diseases were made, and thirty-six specimens of faeces and urine were collected for examination.

Rat Infestation.—Four thousand one hundred and thirty-seven rats examined in the Microbiological Laboratory were found free from plague; these rats are received from rat-catchers employed by the various departments controlling the shipping water front, carriage of grain and fodder, and food storage, etc. The Maritime Services Board have under consideration replacement of a number of old wharves by modern rat-proof structures.

Nuisances.—Investigations were made into 245 inquiries and complaints concerning drainage, nuisances from smoke and fumes, prevalence of mosquitoes, etc. Appropriate action was taken.

Deaths during Cyanide Fumigation.—Investigations were made by this Branch concerning the deaths from cyanide fumes of two occupants of a flat during fumigation by a private firm of another section of the building; and information was prepared for the Coroner's inquiry concerning the deaths.

"Dead Wool" Sorting.—Inspections were made of fifty-three premises used for the sorting of "dead wool," to ascertain the condition of the premises and method of handling the wool.

Legal Proceedings, etc.—Evidence given on behalf of several local authorities necessitated attendance at various courts, including the Supreme Court and the Land Valuation Court.

Prosecutions.—Eighty prosecutions were instituted for breaches of various Acts: the fines and costs imposed amounted to £429.

Amendments to Acts, Regulations and Ordinances.—Further amendments to the Public Health Act, Noxious Trades Act and Regulations thereunder have been prepared and submitted. From time to time proposed amendments to Local Government Ordinances have been submitted to and approved by the Board of Health under Section 4 of the Public Health (Amendment) Act, 1915.

G. A. GARROW,
Chief Sanitary Inspector.

* 50543—C

PRIVATE HOSPITALS ACT, 1908.

Report on the operation of the Act for the year ended 31st December, 1936, by B. R. Overend, M.B., Ch.M., D.P.H., D.T.M., D.T.H., Assistant Medical Officer of Health.

The number of private hospitals licensed in New South Wales as at 31st December, 1936, was 650, having a total of 5,826 beds, this being an increase of 15 licenses and 274 beds compared with the figures for the previous year.

Of the 650 licensed private hospitals, 253, with a total of 3,094 beds, were located in the metropolitan area, and 397, having a total of 2,732 beds, were situated in the country districts. The number of private hospitals in the metropolitan area increased during the year by 12, with an increase of 184 beds, whilst in the country there was an increase of 3 hospitals and 90 beds.

Most of the private hospitals are small, only 47 being licensed to receive more than 20 patients at any one time, while in 492 the accommodation did not exceed 10 beds.

Of the 650 private hospitals licensed, 294 were for the reception of lying-in cases only, 51 for medical and surgical cases only, and 305 for the reception of all classes of cases.

Inspection of Private Hospitals.—Systematic inspections of all licensed private hospitals were carried out by the five Supervisory Nurses during the year, this being in addition to other duties performed by them in connection with the Nurses Registration Act. This enabled each hospital to be inspec ed, on an average, twice during the year, and in cases where further advice was needed a departmental medical officer or a sanitary inspector made special inspections.

It is pleasing to report that a further improvement in the general standard of premises licensed as private hospitals has taken place during the year, but a number of the smaller hospitals are still of poor type. Most of the small private hospitals are devoted to the reception of one or two lying-in cases only, and in practically all these hospitals it is the custom of the midwifery nurse to conduct an outdoor nursing practice in the district, and at the same time conduct her own home as a private hospital in which she has one or two rooms licensed as wards. It is also found that many of these hospitals are conducted in cottages of just sufficient size to comfortably accommodate the licensee and her family so that when one or two rooms are set aside for the use of patients it tends to create congestion and overcrowding. In many cases the equipment and attendance is poor, and owing to the many duties that such a licensee has to perform, she is unable to give her undivided attention to her hospital patients. The carrying on of an outdoor practice by the resident manager of a private hospital is, in my opinion, most undesirable.

Community Activities in Connection with Private Hospitals.—The Bush Nursing Association of New South Wales and the Country Women's Association of New South Wales still continue to carry on the excellent work of maintaining hospitals for the benefit of residents in the more remote parts of the State.

Exemptions.—There were no hospitals holding an exemption in 1936.

Prosecutions.—There were six prosecutions under the Act during the year, and many warnings as to minor infringements of the Act had to be issued.

Sepsis connected with Pregnancy in Private Hospitals.—Of the 84 cases of puerperal sepsis notified during 1936, 60 were notified from private hospitals compared with 69 in the previous year. In all cases they were isolated occurrences and investigation made into each case showed no connection with other infected patients. The existing procedure with regard to such cases, therefore, appears to be effective as far as private hospitals are concerned.

Rest Homes.—These premises were inspected during the year by the Supervisory Nurses, and in most cases the reports on the manner in which they are being conducted were good. However, in some there is a tendency to overcrowding and it is hoped that in any amending legislation such premises will be required to be licensed under the Act.

Private Hospitals Legislation.—As previously expressed, the existing "Private Hospitals Act, 1908," has been found deficient in many important respects, particularly in the matter of adequate provision for prescribing equipment, number of staff, staff quarters, operating theatres and numerous other items. It is again hoped that it will be possible to bring forward amending legislation during the coming year, with a view to supplying these deficiencies in the Act and to procuring more uniformity than is at present possible.

Assistance Rendered by Other Departments.—The thanks of this Department are due to the Commissioner of Police and the Registrar of the Nurses' Registration Board and their officers for their ready and able assistance in connection with the administration of the Private Hospitals Act.

Table I.—Showing Classification of Private Hospitals licensed at 31st December, 1936, according to nature of cases received, and the total number of beds provided by each class of hospital.

	Medical, Surgical, and Lying-in.		Medical and Surgical.		Lying-in.		Total.	
	No. of.. Hospitals.	No. of Beds.	No. of Hospitals.	No. of Beds.	No. of Hospitals.	No. of Beds.	No. of Hospitals.	No. of Beds.
Sydney and District	99	1,937	38	691	116	466	253	3,094
Country Districts	206	1,848	13	151	178	733	397	2,732
Total	305	3,785	51	842	294	1,199	650	5,826

TABLE II.—Showing Classification of Private Hospitals licensed at 31st December, 1936, with respect to size, as signified by the number of beds available.

	1.	2.	3.	4–5.	6–10.	11–20.	Over 20.	Total.
Sydney and District	22	22	21	39	62	51	36	253
Country Districts	22	40	51	88	125	60	11	397
Total	44	62	72	127	187	111	47	650

Comments on Tables I and II.—Table I—From the figures given in Table I it will be seen that hospitals licensed to receive all three classes of patients constitute the greater proportion of those licensed, amounting to 46·9 per cent. of the total, compared with 46·4 per cent. in 1935. Those private hospitals licensed for lying-in cases only constituted 45·2 per cent., compared with 47·5 per cent. in 1935 and those licensed for the reception of medical and surgical cases only formed 7·9 per cent. of the total compared with 6·1 per cent. last year. The number of beds available was greatest in those hospitals licensed for the reception of all classes of cases, amounting to 64·9 per cent. of the total beds, compared with 20·6 per cent. for beds in purely midwifery hospitals and 14·5 per cent. in medical and surgical hospitals.

Table II.—The number of 4–10 bed hospitals is still the largest in proportion of all those licensed, being 48·3 per cent. of the total, and being a small increase on the proportion of the total for the previous year.

B. R. OVEREND,
Assistant Medical Officer of Health.

HOSPITAL ADMISSION DEPOT; MEDICO-LEGAL SECTION, Etc.

REPORT OF THE GOVERNMENT MEDICAL OFFICER FOR SYDNEY FOR THE YEAR ENDED 31st DECEMBER, 1936.

Medical Staff.

Dr. C. E. Percy, Acting Government Medical Officer for Sydney; Dr. C. W. England, Medical Officer; *Depot Assistants*, 2; *Night Officer*, 1.

Medical Work.

Arrangement of Admissions to Hospitals and Homes and Outdoor Treatment.—The Depot is open for this purpose from 9 am. to 5 p.m., Monday to Friday, and from 9 a.m. to 12 noon on Saturday. At all other times a Night Officer is available.

During the year ending 31st December, 1936, 8,153 persons were admitted through the Depot to the various Metropolitan hospitals. 8,293 were admitted to the State Hospitals and Homes at Lidcombe, Liverpool, Newington, George-street and Macquarie-street, Parramatta; 844 to the convalescent Homes at Camden and Vaucluse; and 1,817 persons were referred to the Metropolitan hospitals for outdoor treatment.

The examinations of persons entering convalescent homes, orphanages, etc., are carried out. 125 examinations were made during the year.

Applications by persons living in the country for admission to Metropolitan or Base Hospitals are dealt with.

Medical Examinations for State Government Departments.—These examinations were made as follows:—

(*a*) of persons claiming or receiving aid from the Child Welfare Department;
(*b*) for retirements from the Public Service on account of invalidity;
(*c*) pensioners under the Superannuation Act;
(*d*) of Pilots;
(*e*) to ascertain the fitness of officers to continue duty after reaching 60 years of age;
(*f*) examination of applicants for the Widow's Pension and for renewals of pensions;
(*g*) examination of boys for fitness to undergo courses of farm training;
(*h*) examination of returned soldier applicants referred by the Premier's Department for traveling concessions;
(*i*) examination of applicants for surgical appliances referred by the Chief Secretary's Department;
(*j*) examinations for fitness to hold Motor Driver's Licence (on behalf of the Transport Board).
(*k*) examinations of applicants for admission to the Public Service.

Some of the above persons were visited in their own homes by the Medical Officers.
1,465 such examinations were performed during the year 1936.

Medical Examination of Police Recruits.—751 recruits (probationary constables and police cadets) were examined during 1936. 315 were classed as fit at the first examination, and other were eventually classed as fit when their defects were remedied or when they reached the required physical standards.

On completion of twelve months' service all probationary constables are again examined at the Police Headquarters. 102 such examinations were performed in 1936.

Medical Supervision of Sick Police.—This is carried out daily by the Government Medical Officer at the Police Headquarters. The sick or injured members of the Force attend for treatment or for the purpose of reporting the progress of their illness. The average daily number of police on sick report for 1936 was 68·7

Any other matters concerning the health of the Police Force are also attended to.

Medical-Legal Work.

Examination of Alleged Rape and Criminal Assault Cases and Examination of Criminals.—These cases are examined at all hours, as it is usually desirable that they be examined as soon as possible after the offence. Examinations are made to determine any injury or to ascertain the mental condition of these persons. 94 examinations were made in 1936.

In addition, exhibits connected with these cases or with poisoning cases, etc., are seen before being sent to the Microbiological or Chemical Laboratory.

This work entails the attendance of the medical officers at the lower courts in the city and suburbs and at the Central Criminal Court and the Quarter Sessions for the purpose of giving evidence.

Work for the Coroner's Court.—The Government Medical Officer assists with the post-mortem work at the City Morgue in connection with suicides, murders, violent and uncertified deaths.

Lunacy Work.—The Reception House at Darlinghurst is visited daily by a medical officer for the purpose of examining persons detained there. 1,149 persons were certified as insane in 1936.

In addition, arrangements were made for the transfer of suitable cases to State Hospitals and Homes.

Vaccinations.—Members of the Police Force are vaccinated at the Police Depot during their course of instruction, and members of the general public at the Hospital Admission Depot. 285 vacinations were performed in 1936.

The medical officers attached to this Branch are on duty at all hours and are liable to be called upon at any time by the Police Department for any urgent work of a medico-legal nature.

Ambulance Removals.—The Hospital Admission Depot arranges for the transport of patients to the various Metropolitan hosptials and to the State Hospitals and Homes. This work is carried out by the Central District Ambulance by means of its own ambulances or those of adjacent districts.

The removals carried out during 1936 totalled 12,797.

SECTION I.—B.

DIVISION OF MATERNAL AND BABY WELFARE.

ANNUAL REPORT FOR THE YEAR ENDED 31ST DECEMBER, 1936.

Director: DR. ELMA SANDFORD MORGAN.

PART I.—MATERNAL WELFARE.

The maternal death-rate in New South Wales shows very little tendency to fall, in spite of the efforts of public health authorities, the medical and nursing professions, and the various associations of public-spirited citizens who co-operate with them.

In the year 1936, 236 women died from puerperal causes, the rate being 5·1 per 1,000 live births. This rate was the same as in 1935. As in other countries, and according to the International Classification of Causes of Death, this rate does not include deaths from Illegal Operations, which in New South Wales in 1936 reached 56 (19·2 per cent. of total maternal deaths)—the highest number yet recorded. (See Table I).

TABLE I.

Year.	Total Births.	Total Puerperal Deaths.	Deaths from Illegal Operations.	Percentage of Total Deaths caused by Illegal Operations.	Maternal Mortality Rate, excluding Illegal Operations.	Ratio.*
1912	51,993	305	16	5·2	5·5	
1913	52,134	329	10	3·0	6·1	
1914	53,615	296	9	3·0	5·3	100
1915	52,885	272	8	3·0	4·9	
1916	52,075	297	16	5·3	5·3	
1917	52,467	327	22	6·7	5·8	
1918	50,700	267	15	5·6	4·9	
1919	48,528	263	17	6·4	5·0	95
1920	53,974	331	27	8·1	5·6	
1921	54,634	281	33	11·7	4·5	
1922	55,214	279	32	11·4	4·4	
1923	54,112	283	33	11·6	4·6	
1924	53,670	291	32	11·0	4·8	86
1925	54,615	325	40	12·3	5·2	
1926	53,126	276	40	14·5	4·4	
1927	53,858	352	46	13·0	5·6	
1928	54,800	327	32	9·7	5·4	
1929	52,672	278	33	11·8	4·6	94
1930	52,136	304	44	14·4	4·9	
1931	47,724	288	45	15·6	5·1	
1932	44,905	276	50	18·1	5·0	
1933	44,195	246	34	13·8	4 8	
1934	43,335	263	49	18·6	4·9	92
1935	44,676	282	52	18·4	5·1	
1936	46,193	292	56	19·2	5·1	

* Per cent. ratio of quinquennial averages to average of 1912–16 which is taken as 100.

High as this rate is, it still does not include many deaths almost certainly due to induced abortions (septic or otherwise) which, for want of definite corroboration, are classified as Accidents of Pregnancy or Puerperal Septicaemia following Abortion or Miscarriage.

In Table II may be seen the various causes to which the puerperal deaths are ascribed.

Table II—New South Wales.—Deaths Incidental to Childbirth, 1930–1936.

Causes.	1931.		1932.		1933.		1934.		1935.		1936.	
	No.	Rate per 1,000 Live Births.	No.	Rate per 1,000 Live Births.	No.	Rate per 1,000 Live Births.	No.	Rate per 1,000 Live Births.	No.	Rate per 1,000 Live Births.	No.	Rate per 1,000 Live Births.
Accidents of Pregnancy	24	·53	24	·53	26	·59	20	·46	13	·29	25	·54
Puerperal Haemorrhage	33	·69	39	·87	31	·70	30	·69	39	·87	34	·74
Puerperal Septicaemia	41	·85	26	·58	34	·77	39	·90	44	·99	45	·98
,, ,, following Abortion or Miscarriage..	41	·85	33	·73	32	·73	24	·55	28	·63	32	·80
Albuminuria and Eclampsia	53	1·11	61	1·36	51	1·15	64	1·48	60	1·34	51	1·10
Phlegmasia Alba Dolens, Puerperal Embolism, Sudden Death	23	·48	16	·35	16	·36	11	·26	21	·47	21	·45
Other Casualties of Childbirth.....	28	·58	27	·60	22	·50	26	·60	25	·56	23	·50
Total	243	5·09	226	5·02	212	4·80	214	4·94	230	5·15	236	5·11
Illegal Operations	45	·94	50	1·12	34	·77	49	1·13	52	1·16	56	1·21
Grand Total	288	6·03	276	6·14	246	5·57	263	6·07	282	6·31	292	6·32

Table II gives detailed classification of the deaths due to childbirth. It will be seen by this Table that Albuminuria and Eclampsia (which group also includes Toxaemias of Pregnancy) continues to account for over one-fifth of the deaths—in spite of the increasing amount of pre-natal supervision which is carried out every year by private practitioners and at public maternity hospitals.

The great majority of women in Australia are attended by a medical practitioner at their confinements. In this regard it is interesting to note that among 30,463 New South Wales claimants for the Commonwealth Maternity Allowance of £4 (now £4 10s.) which is payable to women whose family income is not above £300, in the year ended June, 1936, 24,776 were attended by doctors.

Many organisations have urged from time to time that this allowance should only be paid in those cases where the women have placed themselves under pre-natal supervision. In a country such as this, however, where, through distance and other reasons, such supervision is not always accessible, such a scheme would not be practicable.

There are ten departmental pre-natal clinics conducted weekly at suburban Baby Health Centres by me personally. Even at these clinics, where there are special facilities for getting in touch with expectant mothers early in pregnancy, the attendances during 1936 were far from satisfactory. Total attendances were only 2,614—as against 3,136 in 1935—and the actual numbers of individual women attending was also less than in 1935.

It is difficult to account for this falling-off, just as it is difficult to explain the indifference or apathy on the part of the average pregnant woman regarding her own welfare.

It is realised that the facilities for pre-natal supervision are sadly lacking in many districts, but it should not be overlooked that even in the metropolitan area where such care is readily obtainable by all, comparatively few women avail themselves of the facilities offered.

Until this unwillingness on the part of the expectant mother to co-operate is overcome, the maternal death-rate will never be lowered.

Much publicity and educational work regarding maternal welfare is carried out by this Division through public lectures, articles in the weekly press, radio talks, lecture tours in country districts, and the like.

The work of practising midwives, and the conduct of private maternity hospitals is also closely supervised by the department, through special supervisory nurses. Of these, two work in the metropolitan area, three in the country and one in the Newcastle district. In addition, one supervisory nurse's duties are entirely confined to pre-natal work under my personal supervision.

These nurses are all very experienced and treble-certificated (general, maternity and infant welfare).

There are 39 country (district) hospitals in New South Wales with maternity blocks or wards, and 599 private hospitals which are licensed to admit lying-in cases. Over 1,000 visits to these private hospitals (as well as inspections of the country maternity hospitals and training schools) were carried out by the supervisory nurses and 855 visits paid to midwives.

On their visits of inspection, the supervisory nurses have noted a considerable improvement in the standard of maternity nursing during the eight years since these regular inspections were instituted.

With the increased amount of training in obstetrics given to students at the University, and the lengthened course of training now demanded of midwives and maternity nurses by the Nurses Registration Board, it is confidently hoped that the general standard of obstetric practice will gradually be raised—and, after all, it is mainly along these lines that one can look for a reduction in our high maternal mortality rate.

So far as the administrative control of maternal welfare is concerned, this Division is principally concerned with the supervision of private hospitals and midwives already referred to, and to the enforcement of certain regulations under the various Acts.

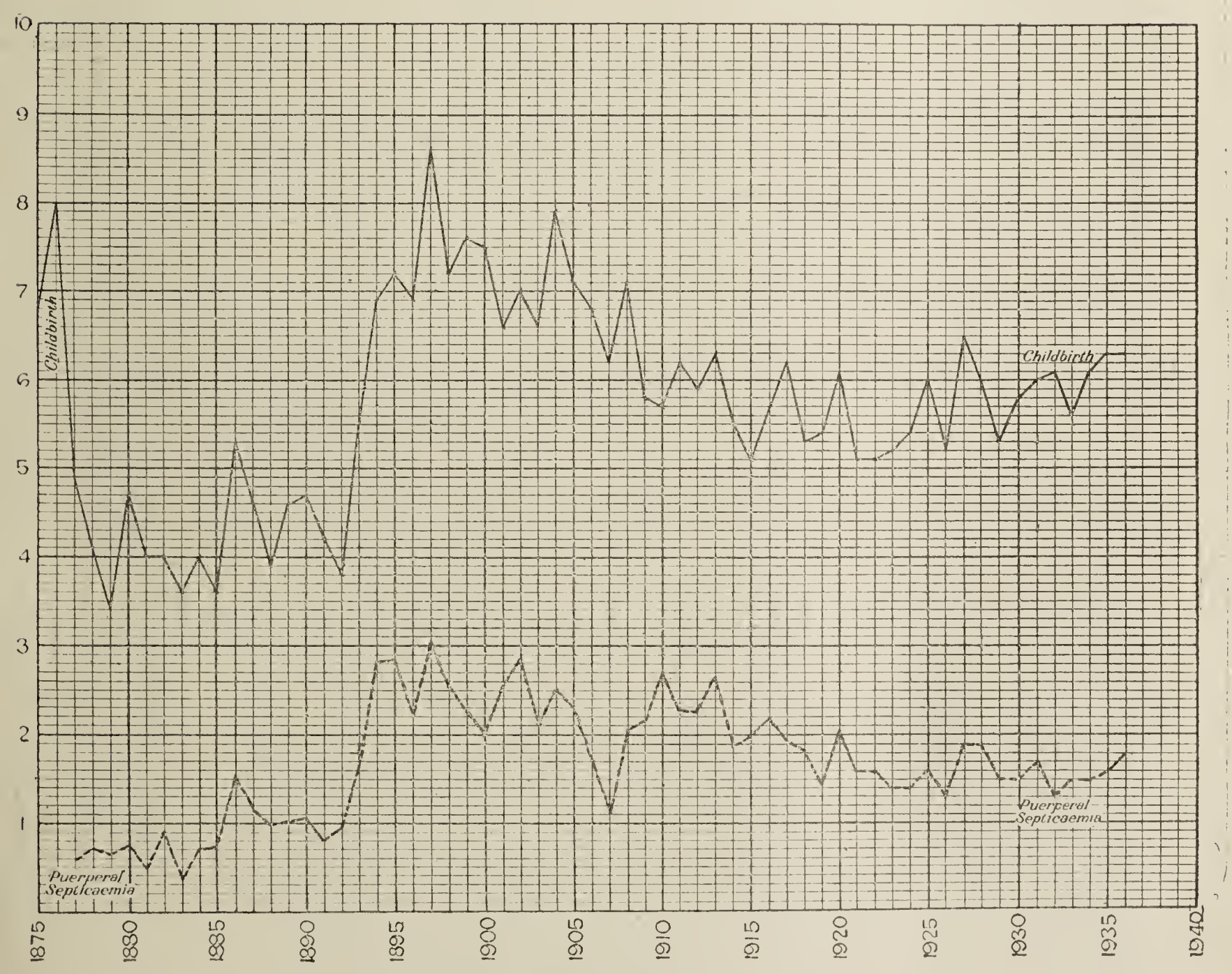
When a lying-in woman develops puerperal pyrexia, from any cause whatever, notification of such pyrexia to the Nurses Registration Board by the midwife is compulsory.

Puerperal pyrexia for the purposes of this Regulation is defined as " any febrile condition occurring in a woman from the end of the first to the end of the tenth day after abortion, miscarriage or childbirth, in which a temperature of 100·4° F. or higher, occurs on more than one day during that period."

GRAPH No. 1.

CHILDBIRTH AND PUERPERAL SEPTICÆMIA.

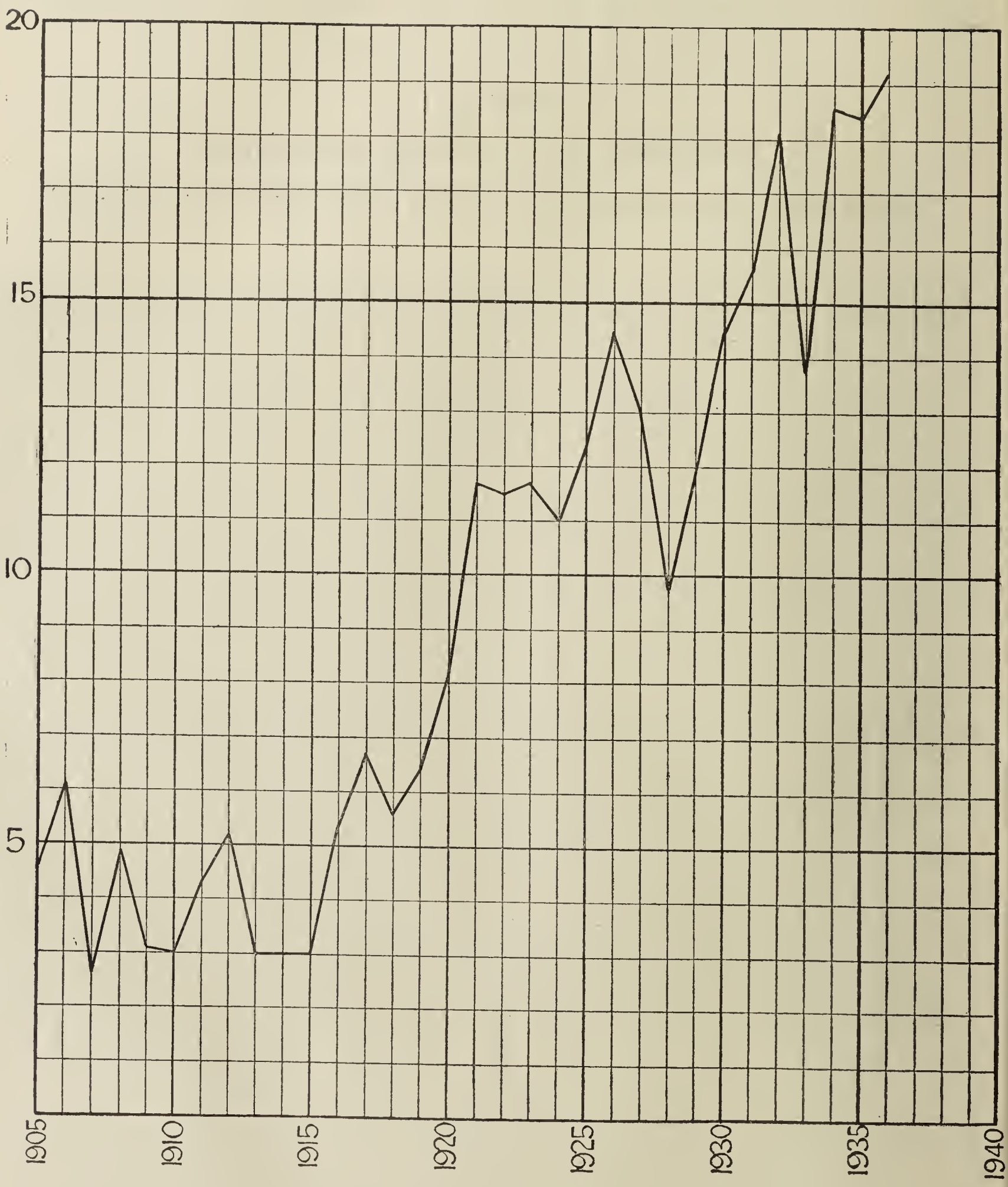
Annual Death Rate of Women per 1,000 Births in New South Wales, 1875-1936.



GRAPH No. 2.

ILLEGAL OPERATIONS.

Percentage of Total Maternal Deaths in New South Wales, 1905-1936.



On receipt of such a notification by the Nurses Registration Board, a medical officer of the department gets into communication with the medical practitioner in attendance on the patient, and if the pyrexia is due to puerperal infection the nurse is prohibited from attending any other patient until she is considered no longer liable to convey infection and obtains the written permission of the Chairman of the Nurses Registration Board (who is the Director-General of Public Health) to resume practice. (During 1936, 206 notifications of puerperal pyrexia were received from midwives.)

Similar precautions are taken with regard to cases occurring in private hospitals, and no other pregnant or lying-in woman may be admitted until fumigation and other precautions against the spread of infection have been taken and the Director-General of Public Health has granted written permission.

Under the Public Health Act, puerperal infection is a notifiable disease—medical practitioners being obliged to notify " any local or general condition, accompanied by fever, arising from or dependant upon any form of infection of puerperal origin occurring in a woman from the end of the first to the end of the tenth day after abortion, miscarriage or childbirth."

There were 326 cases of puerperal infection notified by medical practitioners during 1936, of these the majority (210) followed miscarriage.

Septic miscarriages occur with great frequency largely through deliberate interference with pregnancy by the woman herself with, of course, no aseptic precautions, and partly because the average woman does not look upon even a spontaneous miscarriage as a serious condition necessitating medical attention, and generally only calls in a medical practitioner when symptoms of sepsis supervene.

This is one of the many directions in which educational propaganda must be conducted if our maternal mortality and morbidity rates are to be reduced.

PART II.—INFANT WELFARE.

There was again a rise in the birth-rate in New South Wales during 1936, though the rate is still far below what it was previously and below what it should be in such a new and vast country where the living conditions are so high.

The number of births during the year was 46,193. In addition there were 1,421 still-births. This is the first time accurate figures dealing with still-births have been available, as such births are now notifiable in New South Wales.

For the second time in recent years the infant death-rate—which had been almost steadily falling—showed a marked rise, being 43·47 per 1,000 live births for the whole State. As usual, the rate was lower in the metropolitan area (41·73) than in the rest of the State (44·56).

It is difficult to account for the rise in the rate during 1936. There was no particularly severe epidemic affecting infants under one year, and an analysis of the causes of death given on the death certificates shows that the rise was principally among the group classified as " Prematurity."

Of the 2,008 deaths under 1 year, 674 (or more than one-third) were certified as being due to this cause.

As has been remarked in previous years, the majority of deaths under one year (1,366, *i.e.*, 67 per cent.) occurred during the first month of life and were largely due to pre-natal causes. This neo-natal death rate remains stubbornly irreducible under present conditions here in New South Wales—as in most other countries.

Deaths from diarrhoea and enteritis in infants and young children continue to decrease in number and the general incidence of the disease is becoming considerably less. Deaths from these causes among children over two years of age reached the remarkably low rate of 3·97 per 100,000 of population and under two years the low rate of 5·62 per 100,000.

There is no doubt that this fall can be attributed largely to the increased knowledge of modern methods of mothercraft made available to the mothers of New South Wales through the Baby Health Centres conducted by the Division. Much of the success of these centres, moreover, is due to the fact that the nurses employed in them are all under departmental control, and are all trained at the same Mothercraft Training Home (" Tresillian "), of which there are now three branches. In addition the nurses are general trained, and many hold their certificate of midwifery training also.

There are 160 nurses employed in the Baby Health Centres, and since the opening of the third " Tresillian " Home at Vaucluse in March, 1936, it has become possible for all nurses employed in the Baby Health Centres to return there in rotation for a fortnight's " refresher course."

Considerable expansion of the work was made possible during 1936 by the appointment to the staff of seven additional nurses—resulting in the opening of twenty new Baby Health Centres and depôts. This brings the total number of Centres in the State at the end of 1936 to 160. (At the time of writing several further new centres have been opened.)

New Centres opened during 1936 were at Eastwood, Deewhy, Northbridge, Kempsey, Mudgee, Gulgong, Rylstone, Tumut, Jerilderie, Lindfield, Pennant Hills, Stuart Town, Eumungerie, Geurie, Dora Creek, Swansea, Coolamon, Lawson, Ardlethan and Ariah Park. (A Centre was also opened at Lavington, near Albury, and the Centre at The Weir, in the adjacent district, closed, after completion of public works under construction there.)

It is particularly gratifying that it has at last been possible to open a Centre at Jerilderie (and early in 1937 at Deniliquin) as the Riverina district had previously been untouched by this Division. Of the 160 Centres, fifty-one are in Sydney and suburbs, and 109 in country towns.

It is largely through the agency of the Country Women's Association of New South Wales that new country centres are continually being opened—the local branches in most cases (with or without assistance from shire or municipal councils) holding themselves responsible for the rent, equipment and upkeep of the Centres; the nurses are provided and the Centres controlled by the Government.

In some instances recently, Citizens' Committees, consisting of public-spirited men and women, have made possible the opening of new centres. An example of this co-operation is the Baby Health Centre at Mudgee (opened during 1936) which was built and equipped by a Citizens' Committee and handed over by them to the local branch of the Country Women's Association free of debt.

No sick babies are treated at Baby Health Centres, and children suffering from infectious diseases are not allowed to attend there.

The work is purely preventive—to " keep the well baby well " and to instruct mothers in the simple rules of infant welfare and feeding.

Although the great majority (at least 75 per cent.) of attendances are of infants under one year old, mothers are encouraged to attend with their children up to five years of age—when they pass into the care of school medical officers.

The work among toddlers is increasing a little, especially at those Centres where provision is made for them with special scales, measuring rods, etc.—but there is room for a great deal of expansion in the direction of caring for the pre-school child.

The fact that 57,045 individual babies attended the Baby Health Centres throughout the State during 1936 (an increase of about 450 on the previous year) shows that the great majority of mothers avail themselves of the services offered. The number of attendances has increased steadily every year since the first Baby Health Centres in the State were opened in 1914.

Total attendances during 1936 reached 674,588 (an even greater number than those of 1935—615,386), 26,277 new cases being enrolled.

As soon as a notification of birth is received from the local Registrar in the district where there is a Baby Health Centre, the nurse calls upon the mother and invites her to attend the Centre regularly with her baby as soon as she is about again. In this way 17,829 " first " visits were paid by the nurses during 1936, and 54,733 subsequent visits. These figures are lower than the corresponding figures for the previous year, partly because the increased pressure of work in the Centres left the nurses less time for visiting, but mainly because more and more mothers are coming to the Centres every year without waiting to be called upon to do so. Similarly, as more mothers realise the value of regular attendance at the Centres, there is less need for the nurses to pay " follow-up " visits.

The chief lesson taught at the Baby Health Centres is the importance of breast-feeding and the fact that practically every woman can at least partially breast-feed her baby. What appear to be almost unsurmountable difficulties are overcome by many of the mothers with the assistance of the nurses. Where there is any doubt as to the amount of milk which the baby is receiving a " test-feed " is carried out. This was done on 38,179 occasions during the year.

Many expectant mothers visit Baby Health Centres for general advice, patterns of baby clothes, etc., etc. (quite apart from attendances at the pre-natal sessions referred to in Part I of this Report). The nurses advised 8,710 women in this way during 1936.

Every opportunity is taken of interesting the general public in matters pertaining to mothercraft. Articles are supplied to newspapers, wireless talks are given, lectures, classes to senior schoolgirls and domestic science pupils and instruction to Girl Guides, both by members of the nursing staff and by myself. During 1936 the work was intensified in country districts, as well as being extended to other States. This was made possible through special showings of the departmental film depicting " What the State of New South Wales does to Safeguard its Mothers and Babies."

The publicity officer of the department arranged these screenings through the local branches of the Country Women's Association, and through the generosity of the proprietors of the local cinemas, who in every case placed their theatre at the disposal of the department free of charge and supplied the operators. At some of these sessions the attendances were as high as 900. On many occasions I was also present and spoke on various aspects of the work.

Through the Queensland Mothercraft Association, I was also able to show the film before an interested and representative meeting convened by that Association in Brisbane in August.

In September, I attended the Child Welfare Congress in Adelaide in connection with the Women's Centenary Conference as an official representative, and delivered an address. Through the Mothers' and Babies' Health Association there, and by courtesy of the Vice Chancellor, the departmental film was shown at the University to a crowded audience, consisting of members of the Health Association, of the University Staff, of the British Medical Association and of the other members of the Conference.

Tresillian Mothercraft Home.—As a result of the special appeal, £2,000 was collected by the nursing staff of the Baby Health Centres towards the adaptation and equipment of " Tresillian," Vaucluse.

At the time of writing, this Division has recently sustained the loss of a valuable and devoted servant by the premature death of Sister Alice Burton—for many years in charge of the Surry Hills Centre.

Sister Burton was one of the early members of the Baby Health Centres' staff, to whose pioneer efforts in the difficult work of introducing infant welfare in districts where it was not welcomed the present-day success is mainly due.

In addition to her general duties, and in spite of ill-health in recent years, she carried out much valuable educational and demonstration work for the Division, and persisted with her duties until within a few weeks of her death.

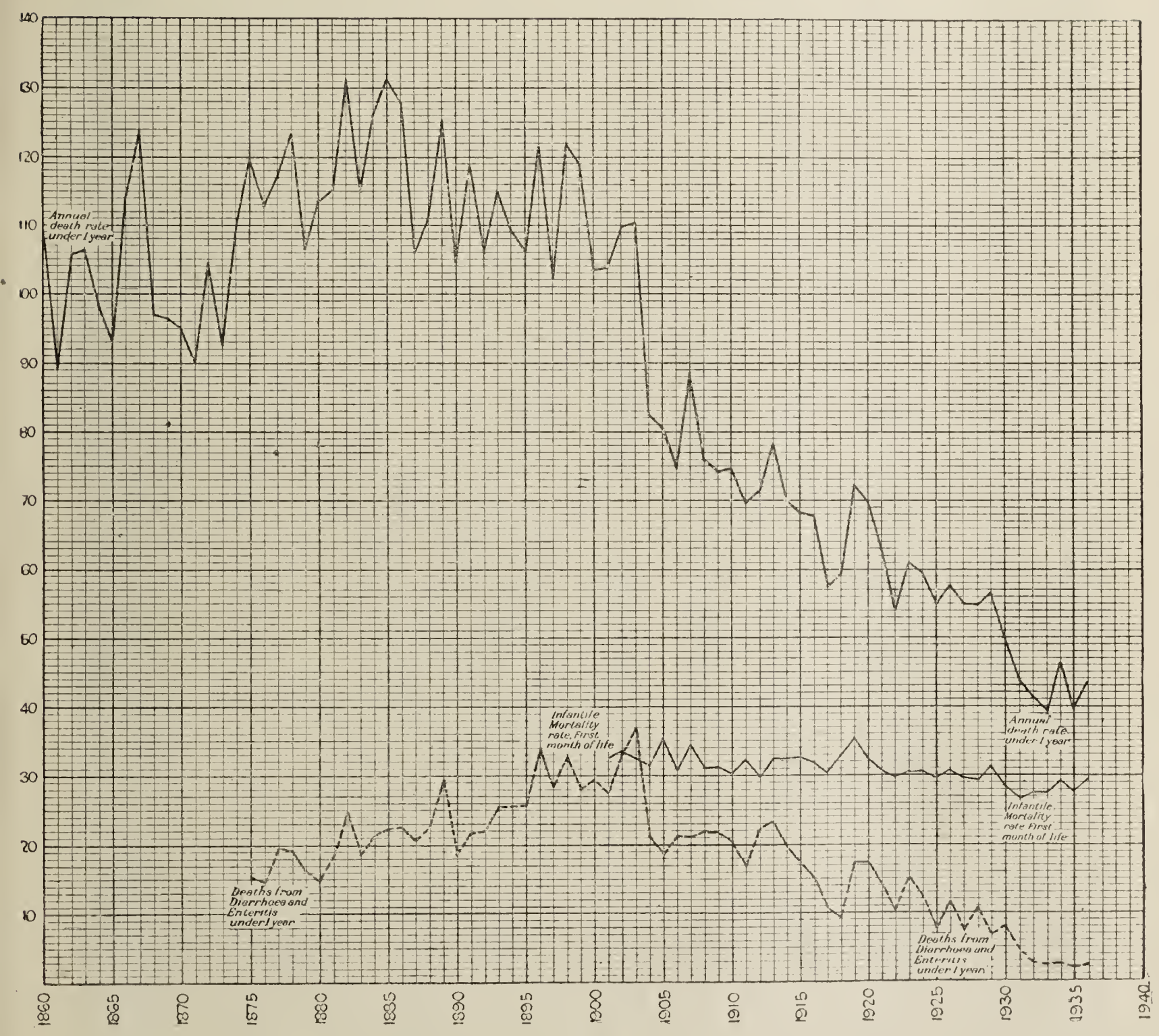
In concluding this Report I wish to tender my sincere thanks to the Country Women's Association and other bodies who have co-operated with the department in establishing and maintaining Baby Health Centres, as well as to the honorary medical officers, the publicity officer and to the members of the nursing staff—whose loyal, enthusiastic and tactful service is largely responsible for the increasingly successful work of the Division.

ELMA SANDFORD MORGAN,
Director of Maternal and Baby Welfare

GRAPH No. 3.

INFANTILE MORTALITY IN NEW SOUTH WALES, 1860-1936.

Annual Death Rate of Children under 1 Year, per 1,000 Births



GRAPH No. 4.

DIARRHOEA AND ENTERITIS.

Annual Death Rate per 100,000 of the population in New South Wales, 1875-1936.

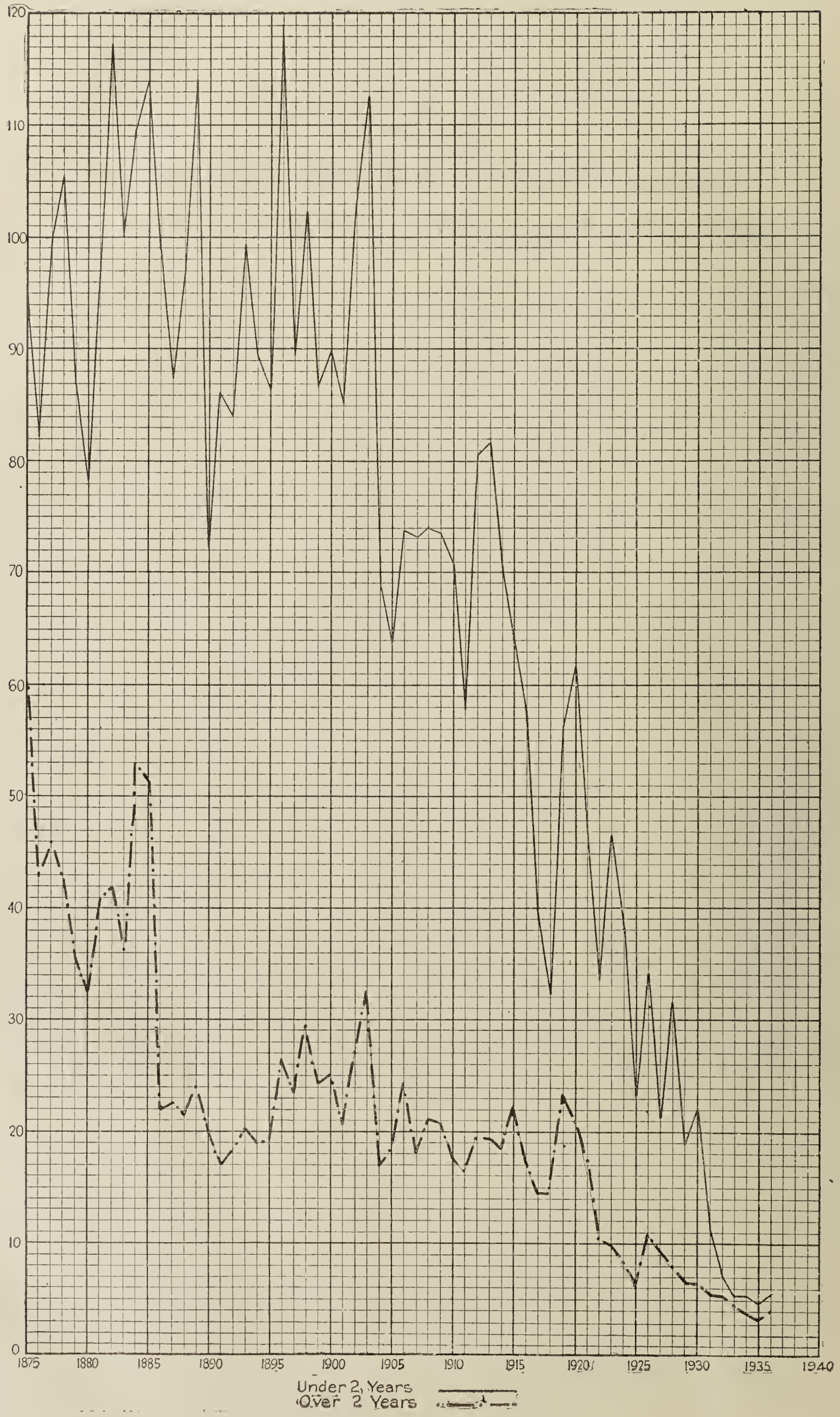


TABLE III, showing the work of the 160 Baby Health Centres in New South Wales, during the year ended 31st December, 1936.

Health Centres.	Visits to Individual New-born Babies.		Subsequent Visits to Homes of Babies.		Total Attendances, Including Expectant Mothers.		Individual Babies Attending Centres.	
	1935.	1936.	1935.	1936.	1935.	1936.	1935.	1936.
Alexandria	235	268	1,519	1,687	10,175	9,530	730	690
Annandale	217	215	342	386	5,127	5,371	404	468
Ashfield	301	289	725	582	12,667	14,907	909	1,009
Auburn	219	273	440	368	8,005	7,993	496	648
Balmain	304	406	1,324	1,437	8,655	10,100	725	803
Bankstown	180	175	366	406	6,376	7,505	525	593
Burwood	486	449	1,055	689	12,733	13,978	1,162	947
Campsie	476	504	811	775	14,542	16,490	1,398	1,522
Chatswood	271	209	618	503	15,713	14,198	968	1,112
Chippendale	290	271	528	445	7,341	5,478	280	466
Daceyville	363	380	1,207	1,046	10,649	11,418	900	905
Dee Why	...	60	...	181	...	2,482	...	272
Earlwood	174	154	625	761	6,468	7,952	356	386
Eastwood	...	...	...	...	...	2,516	...	242
Five Dock	232	211	716	667	8,512	10,710	675	716
Gladesville	...	16	...	27	4,142	4,932	480	386
Glebe	149	147	1,194	1,215	6,475	7,017	456	370
Granville	370	376	581	610	6,840	7,626	891	867
Homebush	80	60	412	395	4,723	5,180	308	318
Hornsby	194	178	574	383	4,847	5,516	365	230
Hurstville	423	431	715	672	12,836	13,251	1,157	1,299
Kogarah	266	224	371	296	8,772	8,887	560	613
Lane Cove	181	159	976	838	7,664	8,984	698	698
Leichhardt	472	538	583	839	9,480	10,897	721	755
Lidcombe	143	159	267	273	4,080	4,434	315	282
Lindfield	...	...	...	...	...	1,135	...	187
Liverpool	...	...	...	...	2,623	3,002	324	550
Manly	151	168	843	654	14,394	13,892	1,450	1,363
Marrickville	397	383	631	846	7,362	9,375	556	720
Mascot	265	257	1,221	1,083	7,812	7,897	580	592
Miller's Point	32	33	277	307	1,191	1,466	70	134
Mortdale	...	...	...	...	2,217	2,315	192	201
Mosman	224	212	864	855	11,936	12,441	701	715
Newtown	395	403	1,159	1,187	13,837	12,966	1,260	963
Northbridge	...	20	...	43	...	1,081	...	86
North Sydney	512	493	802	770	12,063	11,181	1,096	937
Paddington	248	241	732	928	11,553	12,593	819	962
Parramatta	192	197	611	498	10,709	12,286	1,030	1,151
Pennant Hills	...	...	...	...	...	211	...	36
Petersham	156	176	511	367	9,234	9,719	589	739
Punchbowl	...	...	...	...	2,340	2,622	223	189
Pyrmont	64	54	625	489	2,618	2,104	152	84
Randwick	187	238	575	692	13,875	13,924	1,114	1,163
Rockdale	368	216	584	608	13,534	15,408	887	927
Rose Bay	384	441	939	843	13,428	15,622	1,363	1,363
Ryde	120	96	351	290	10,040	9,098	767	602
St. Peters	131	148	840	854	2,669	2,661	257	255
Surry Hills	163	158	714	948	8,000	7,755	680	600
Sutherland	63	60	131	129	1,897	2,089	140	193
Waverley	341	389	945	953	18,819	20,748	1,591	1,697
Woolloomooloo	215	203	781	1,210	8,033	8,137	660	716
Abermain	11	21	45	53	834	821	77	86
Adamstown	86	64	277	185	3,205	3,386	297	382
Adelong	17	...	16	...	452	1,936	37	50
Albury	93	122	649	664	4,913	5,027	481	490
Ardlethan	...	...	...	...	...	64	...	21
Ariah Park	...	3	...	15	...	36	...	16
Armidale	145	160	887	1,175	2,292	2,726	240	300
Barellan	21	19	21	19	275	183	56	40
Bathurst	671	73	344	223	5,339	5,399	592	596
Berrima	9	4	31	10	107	282	17	25
Blackheath	4	25	7	119	42	651	23	76
Boggabri	36	...	93	...	925	634	63	58
Bowral	38	48	403	328	1,169	1,209	119	115
Broken Hill—Central	155	153	665	448	5,800	6,635	340	359
,, North	72	48	238	263	3,607	4,380	245	312
,, South	34	42	330	318	2,515	3,094	185	238
,, Railway Town	39	37	495	412	4,409	4,330	241	276
Bulli	28	7	9	6	221	2,405	51	161
Bundanoon	14	6	20	8	221	313	36	40
Bungendore	8	11	14	21	137	207	54	27
Carrington	...	...	...	...	1,532	1,466	119	79
Casino	121	73	373	200	3,252	3,618	308	305
Cessnock	179	181	266	343	5,339	5,345	520	525
Coolamon	...	6	...	3	...	39	...	14
Cooma	70	78	273	303	1,554	1,778	260	349
Cootamundra	78	78	498	269	2,284	2,209	211	200
Corowa	80	49	384	460	1,469	1,718	187	170
Cowra	76	74	267	228	1,909	2,102	216	208
Crookwell	44	41	103	138	337	336	54	62
Culcairn	16	22	17	63	319	384	45	49
Dora Creek	...	...	...	...	...	35	...	20
Dubbo	176	181	631	820	4,339	4,449	273	390
Eumungerie	...	...	...	...	...	46	...	10

TABLE Showing Work of Baby Health Centres—*continued.*

Health Centres.	Visits to Individual New-born Babies.		Subsequent Visits to Homes of Babies.		Total Attendances, including Expectant Mothers.		Individual Babies Attending Centres.	
	1935.	1936.	1935.	1936.	1935.	1936.	1935.	1936.
Forbes	60	78	219	218	2,163	1,944	216	164
Gilgandra	70	43	82	101	512	502	77	50
Glen Innes	83	105	195	146	2,653	2,397	177	205
Goolgowi	...	...	...	...	115	136	31	32
Gosford	43	88	84	113	1,364	2,374	134	285
Goulburn	226	208	761	282	5,807	6,009	606	670
Grafton	97	120	318	211	4,853	5,109	579	638
Griffith	124	123	224	239	2,324	2,720	265	296
Geurie	...	10	...	13	...	162	...	23
Gulgong	...	22	...	41	...	402	...	61
Gundagai	75	42	237	53	1,181	1,635	69	124
Gunnedah	70	75	289	136	1,663	1,065	112	131
Hamilton	238	183	657	965	13,813	15,971	1,216	1,328
Henty	14	23	67	53	287	351	52	58
Inverell	104	113	402	357	3,348	2,844	274	166
Jerilderie	...	2	...	12	...	63	...	20
Junee	81	88	304	273	1,731	1,074	124	150
Katoomba	97	54	502	485	2,353	2,710	453	504
Kempsey	...	126	...	295	...	1,498	...	225
Kurri	119	107	703	579	5,560	6,018	309	394
Kyogle	69	67	105	103	818	1,301	101	126
Lavington (vice The Weir)	...	...	...	...	...	110	...	26
Lawson	...	...	...	...	...	82	...	24
Leeton	47	47	105	101	2,258	2,805	178	215
Lismore	319	331	303	333	5,410	5,641	610	626
Lithgow	228	191	1,171	1,152	4,776	5,072	486	398
East Maitland	128	60	401	108	1,237	1,287	146	128
West Maitland		188		505	5,485	5,672	561	644
Mayfield	119	138	821	721	10,741	11,224	901	1,100
Michelago	...	...	...	...	164	134	24	21
Millthorpe	10	7	27	5	297	337	40	56
Mittagong	45	38	220	195	777	1,005	79	90
Moree	74	61	606	421	3,145	3,352	225	275
Moss Vale	48	37	214	190	463	595	54	62
Mudgee	...	82	...	306	...	902	...	155
Muswellbrook	70	62	243	290	1,619	1,705	142	139
Narrabri	71	65	135	64	1,439	1,203	92	109
Narrandera	56	65	121	134	2,198	2,349	90	242
Narromine	27	42	73	122	982	1,130	184	92
Newcastle	328	318	1,084	1,076	8,998	9,337	814	570
New Lambton	133	134	175	185	1,614	1,913	175	190
Nowra	62	47	483	527	2,957	3,368	248	300
Orange	207	242	831	683	4,910	6,147	579	638
Parkes	66	102	168	244	942	2,039	132	167
Port Kembla	...	19	...	4	770	625	64	55
Queanbeyan	100	95	612	583	1,884	2,500	180	273
Richmond	52	22	80	13	1,245	1,733	170	128
Riverstone	...	20	...	3	697	969	52	71
Rylstone	...	31	...	57	...	204	...	40
St. Mary's	8	17	5	51	97	368	30	115
Singleton	76	54	292	270	1,613	1,561	91	137
South Singleton					850	808	48	53
Stockton	...	...	...	...	1,820	2,136	116	121
Stuart Town	...	4	...	5	...	93	...	29
Swansea	...	...	...	...	...	346	...	76
Tamworth	219	154	679	516	7,003	7,178	846	875
Temora	86	86	178	218	1,098	1,358	128	132
Trangie	25	20	62	90	579	667	58	59
Tumut	...	...	...	...	...	241	...	41
Uralla	29	41	166	214	920	1,299	68	96
Wagga	193	200	356	370	6,215	5,738	547	524
Walcha	55	62	152	186	1,215	1,329	121	124
Wallsend	114	100	154	144	2,638	2,501	170	290
West Wallsend	...	...	...	...	1,905	2,463	180	192
Waratah	79	61	322	182	1,376	1,630	144	181
Wellington	73	78	275	252	2,137	2,928	173	237
Werris Creek	52	42	157	108	1,036	1,268	114	133
Weston	55	50	218	210	1,987	2,025	151	141
Windsor	38	37	97	49	1,060	1,283	101	110
Wollongong	159	159	459	465	4,343	4,934	435	473
Woodstock	9	...	29	...	153	216	21	20
Woy Woy	...	...	...	...	537	828	37	80
West Wyalong	2	32	3	32	261	582	57	69
Wyong	...	16	...	11	553	894	58	91
Yass	59	66	1,267	1,344	2,517	2,601	247	198
Young	50	65	227	190	1,517	1,865	214	191
Totals	18,096	17,829	55,561	54,733	615,386	674,588	52,503	57,045

1936.—"Test Feeds" 38,179; Expectant Mothers advised, 8,710; New cases enrolled, 26,277.

PUBLICITY AND PROPAGANDA—RESUME OF 1936 ACTIVITIES.

The most noteworthy development in connection with publicity and propaganda during the past year, was the completion and screening of a motion picture featuring the work of the Pre-Natal Clinics and Baby Health Centres conducted by the Department of Public Health, and the "Tresillian" Mothercraft Homes at which the Baby Health Centre Sisters receive their post-graduate training in Mothercraft. These latter are conducted by the Royal Society for the Welfare of Mothers and Babies.

The film is 4,000 feet in length, of standard size and shows the work of the institutions mentioned in considerable detail. It has now been shown in over twenty country towns and several suburbs of Sydney. Almost all the country screenings have been most successful, the meetings being well attended and the people most interested. The shows in the suburbs, on the other hand, were not nearly so well attended. The biggest meeting to date was held at Orange, when between 800 and 900 people were present.

These meetings are held in the local picture theatres, the proprietors of which co-operated most enthusiastically with the department, and in no case has it been necessary to defray the expenses, which have been borne by the theatre proprietors. This is a form of assistance which is highly appreciated by the department.

The meetings have been generally held under the auspices of the Country Women's Association, with the co-operation of the local Municipal and Shire Councils and other bodies. The press and broadcasting companies have willingly assisted with free publicity; indeed, everyone has co-operated with the department in this campaign to educate the public in regard to the wonderful work being carried out by the institutions mentioned, and the necessity for pre-natal care, expert mothercraft advice and training, and child welfare. Bathurst, Casino, Dubbo, Forbes, Grafton, Kempsey, Kyogle, Macksville, Lismore, Orange, Parkes and Wellington were some of the larger towns at which the picture was shown.

Press publicity was continued and extended, and over 200 suburban and country newspapers are publishing health articles nearly every week.

Another edition of 50,000 copies of the departmental booklet "Our Babies" was issued in 1936. Most of the copies have been distributed, and another edition is in preparation.

Two editions of the "Health Week" booklet, one for distribution in the country and the other in the Metropolis were published, and also a special booklet for the Newcastle area. Seventy thousand free copies of these publications were distributed during the year. Another booklet on "Safety and Health" was compiled, and 30,000 free copies were issued to the public.

The usual Health Week campaign was held in October, and proved even more successful than in the past. Nearly 100 organisations interested in the protection and promotion of the public health now co-operate in the campaign, with the result that a very comprehensive programme was arranged, extending over nearly three weeks.

An innovation in 1936 was a "Health Week" in the Newcastle district in February; which proved most successful. "Clean Up" campaigns were conducted by the local councils in conjunction with both the Sydney and Newscastle Health Weeks.

During the year the Government Printer completed the reproduction of the fourteen coloured posters obtained by the department in 1934 as a result of a poster competition. Over 1,000 of these posters have been distributed and are on display throughout the State. In addition 1,000 enamel notices on Venereal Diseases have been erected in lavatories, and a further 500 notices are on order.

A further supply of larger coloured posters is to be printed shortly for display on railway hoardings; and attractive notices for display in suburban railway carriages are now being printed.

Health motion pictures were shown at various meetings throughout the year, numerous addresses were given, and everything possible was done, within the limits of our resources, to educate the public in safeguarding their own and their child en's health.

A. G. WHITE,
Publicity Officer.

SECTION I—C.

COMMUNICABLE DISEASES.

1.—NOTIFIABLE INFECTIOUS DISEASES RECORDED IN NEW SOUTH WALES DURING THE YEAR ENDED 31ST DECEMBER, 1936.

(F. S. WEARNE.)

Public Health Acts, 1902–1932.

The Public Health Act, 1902, provides that the Governor may, by Proclamation in the *Government Gazette*, declare that any disease therein named is an infectious disease. No alteration to the existing list was made in 1936.

	Notifiable from—	Cases and Deaths Notified.					
		1934.		1935.		1936.	
		Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Typhoid fever and paratyphoid	1st January, 1898	141	19	173	20	132	19
Scarlet fever	,, ...	2,166	19	2,250	18	3,939	26
Diphtheria or membranous croup	,, ...	6,167	193	4,913	194	7,064	220
Bubonic plague	23rd January, 1900.....	...	...	...	...	...	...
Infantile paralysis (including any form of acute anterior poliomyelitis, polioencephalitis or polio-myelocneephalitis)	1st February, 1912. Definition Re-proclaimed 14th August, 1931 ...	94	13	181	20	23	6
Epidemic cerebro-spinal fever (meningococcal meningitis)	11th October, 1915 ...	29	7	29	5	11	4
Encephalitis lethargica.....	1st April, 1926	6	15	7	16	7	5
Cholera	12th August, 1927	...	...	...	...	...	...
Typhus fever	,, ...	7	...	9	1	4	...
Yellow fever	,, ...	...	...	...	...	...	...
Puerperal infection	16th August, 1929	238	63	266	72	326	82
	Total	8,748	329	7,828	346	11,506	362
	Population at 31st Dec.	2,623,817		2,645,575		2,681,736	

Public Health Act, 1902.

The number of cases of proclaimed infectious diseases in 1936, notifiable under this Act, and the deaths therefrom are shown in Tables I–III (pp. 49-53). Tables IV* and V show the age, sex and seasonal incidence, and Table VI the yearly notifications of proclained infectious diseases from 1898 to 1936 inclusive.

In 1936 there were 11,506 notified cases of infectious disease, compared with 7,828 cases in 1935, the increase being due mainly to a severe epidemic of diphtheria, of which 7,064 cases with 220 deaths were reported, compared with 4,913 cases and 194 deaths in 1935. There was also an increase in scarlet fever prevalence in 1936, of which 3,939 cases and 26 deaths were notified, as compared with 2,250 cases and 18 deaths in 1935.

Typhoid Fever.—132 cases and 19 deaths occured, compared with 173 cases and 20 deaths in 1935. This is the lowest incidence of typhoid fever hitherto recorded.

Infantile Paralysis.—A total of 25 cases and 6 deaths were notified in 1936, a fatality rate of 24 per cent.

Puerperal Infection.—326 cases and 82 deaths were notified in 1936. Factors influencing the maternal mortality rate are discussed in the Report of the Director of the Maternal and Baby Welfare Division (p. 37).

Cerebro-spinal Meningitis.—11 cases and 4 deaths were reported in 1936, compared with 29 cases and 4 deaths in 1935.

Encephalitis Lethargica.—7 cases and 5 deaths were notified.

Endemic Typhus Fever.—Four non-fatal cases were reported in 1936. In 1935 nine cases (1 fatal) were notified.

Bubonic Plague.—No case of plague has been recorded in New South Wales since 1923. Systematic trapping of rats is continuous along the foreshores used by overseas shipping, on ships, and in various parts of the city, but no infection was detected in the 4,137 rats and mice examined in the Microbiological Laboratory during 1936.

Smallpox.—No case of smallpox was reported in the State during 1936.

Leprosy.—Three persons suffering from leprosy were admitted to the Lazaret in 1936, and 1 patient died. On 31st December, 1936, sixteen persons (13 males and 3 females) remained in the Lazaret; the report on which will be found on page 160.

Public Health (Amendment) Act, 1915.

Pulmonary Tuberculosis is notifiable under this amending Act. During the year 1,372 cases and 955 deaths were recorded, a decrease of 200 in the number of notified cases, and an increase of 16 in the deaths. compared with the 1,572 cases and 939 deaths reported in 1935. Reports of the Tuberculosis Division and of the Waterfall Sanatorium will be found respectively on pages 72 and 165.

Venereal Diseases Act, 1918.—5,160 notifications were recorded under this Act in 1936, compared with 4,829 in 1935, an increase of 331. The Director's review of the year's work and survey of the present position will be found on page 67.

* Tables showing the age and sex and seasonal incidence of the notified cases of Infectious Diseases for the years 1931, 1932 and 1933 are included in this Report pages 57-60. To economise in printing costs, these Tables were omitted from the Reports for those years, but so much inconvenience has been caused by their omission that they are now inserted for reference.

TABLE I.—Showing the number of notified cases of, and deaths from, the following diseases.—Cerebro-spinal Fever (Meningococcal Meningitis), Diphtheria and Membranous Croup, Encephalitis Lethargica, Infantile Paralysis (Acute anterior Poliomyelitis), Scarlet Fever, Typhoid Fever (including Paratyphoid), Pulmonary Tuberculosis, and Puerperal Infection in the METROPOLITAN COMBINED DISTRICTS for the year ended 31st December, 1936.

Municipality or Shire.		Estimated Mean Population.	Typhoid and Paratyphoid.		Scarlet Fever.		Diphtheria.		Infantile Paralysis.		Cerebro-spinal Meningitis.		Encephalitis Lethargica.		Puerperal Infection.		Pulmonary Tuberculosis.	
			C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
METROPOLITAN MUNICIPALITIES.*																		
Sydney, City of	1	87,640	1	...	178	1	181	6	...	...	...	1	...	...	139	70	24	2
Alexandria	2	8,940	2	2	23	...	26	3	...	...	...	...	...	...	4	5	3	...
Annandale	3	12,180	...	...	35	...	31	1	...	...	...	...	...	...	7	8	1	1
Ashfield	4	39,900	2	...	68	1	47	...	...	...	...	...	...	...	32	15	7	2
Auburn	5	20,320	8	...	41	...	54	1	...	...	...	...	...	...	13	14	1	...
Balmain	6	28,080	...	...	99	...	81	3	...	...	...	...	...	...	31	10	9	...
Bankstown	7	26,440	...	...	33	...	75	5	...	...	...	...	...	...	16	15	6	1
Bexley	8	20,950	...	...	45	...	49	1	...	...	...	...	...	...	11	8	4	1
Botany	9	8,590	2	...	22	...	40	3	...	...	2	...	...	...	8	6	7	1
Burwood	10	19,810	...	...	30	...	27	...	...	...	1	...	1	...	10	9	4	1
Canterbury	11	80,740	2	...	230	2	160	7	...	...	...	...	...	...	45	35	10	2
Concord	12	23,630	1	...	80	...	42	1	...	...	...	...	...	...	6	5	1	...
Darlington	13	3,000	...	...	8	...	21	2	...	...	...	...	...	...	5	...	1	1
Drummoyne	14	29,850	1	...	97	...	50	4	...	...	...	...	...	...	11	9	1	1
Dundas	15	6,280	...	...	9	...	30	...	...	...	...	...	...	...	2	2	...	...
Eastwood	16	3,150	...	...	5	...	10	1	...	...	...	...	...	...	2	2	1	...
Enfield	17	14,950	...	...	28	...	27	1	...	...	...	...	1	...	10	2	4	2
Ermington & Rydalmere	18	2,390	...	...	...	...	1	...	...	...	...	...	...	...	3	2	...	...
Erskineville	19	6,610	...	...	20	...	20	...	1	1	...	...	...	...	5	...	3	1
Glebe	20	19,690	...	...	35	...	56	...	...	...	...	...	...	...	23	9	9	...
Granville	21	20,080	2	...	51	...	28	2	...	...	...	...	...	...	7	7	6	1
Holroyd (Pitt and Merrylands Wards	22	8,720	...	...	...	1	...	2	...	...	...	...	...	...	...	4	...	1
Homebush	23	3,200	...	...	9	...	6	...	...	...	...	...	...	...	7	1	2	...
Hunters Hill	24	9,190	...	...	19	1	20	...	...	...	1	...	...	...	9	2	1	...
Hurstville	25	23,410	...	1	41	...	61	2	...	...	...	...	...	...	25	10	5	2
Kogarah	26	31,660	...	...	63	...	81	2	1	...	...	...	...	...	22	10	6	...
Kuring-gai	27	30,160	...	...	18	1	32	1	...	...	...	...	...	1	17	12	2	1
Lane Cove	28	15,660	...	...	30	...	34	1	1	1	...	...	...	...	8	4	...	1
Leichhardt	29	30,310	...	...	57	...	67	8	1	1	...	...	...	...	24	13	7	1
Lidcombe	30	17,530	...	...	24	...	30	1	...	...	...	...	...	...	20	10	3	...
Manly	31	24,240	1	...	31	...	41	1	1	...	...	...	...	...	18	5	2	1
Marrickville	32	45,680	1	...	105	1	180	1	...	...	...	...	...	...	36	17	6	1
Mascot	33	14,970	1	...	23	...	59	3	1	1	1	...	...	...	15	6	6	1
Mosman	34	24,330	2	...	24	...	23	...	...	...	...	...	...	1	9	5	2	1
Newtown	35	25,090	...	...	70	...	78	3	...	...	...	...	...	...	22	17	8	...
North Sydney	36	50,440	...	...	53	...	121	4	...	...	...	...	...	...	31	20	5	...
Paddington	37	24,600	1	...	94	...	73	3	...	...	...	...	...	...	31	10	7	...
Parramatta	38	18,500	...	...	18	2	14	2	...	...	...	...	...	...	13	11	1	...
Petersham	39	27,230	...	...	56	...	89	8	...	...	...	...	...	...	19	12	6	...
Randwick	40	80,690	11	2	194	1	174	4	...	...	...	...	1	1	72	34	12	1
Redfern	41	18,590	...	...	20	1	86	3	...	...	...	...	...	...	22	19	4	2
Rockdale	42	40,200	1	...	120	1	119	3	...	...	...	...	...	...	20	13	4	1
Ryde	43	28,850	1	1	40	...	156	5	...	...	...	1	...	...	10	13	7	3
St. Peters	44	12,560	...	...	24	...	38	...	...	...	...	...	...	...	4	5	4	...
Strathfield	45	12,610	...	...	27	...	18	1	1	...	...	...	...	...	7	1	...	1
Vaucluse	46	7,560	1	1	10	...	5	...	...	...	...	...	...	...	4	1	1	...
Waterloo	47	11,690	...	...	34	...	57	...	...	...	...	...	...	...	13	5	6	1
Waverley	48	58,230	7	...	110	1	82	2	...	...	...	...	...	...	39	15	6	2
Willoughby	49	43,820	...	...	58	1	84	1	...	...	...	...	...	...	32	24	2	1
Woollahra	50	36,040	...	...	54	...	54	1	...	...	1	...	1	...	25	11	8	1
EXTRA METROPOLITAN MUNICIPALITIES.																		
Cabramatta and Canley Vale	105	6,760	2	...	19	1	28	...	...	...	...	...	...	...	2	6	2	...
Fairfield	108	9,330	...	...	17	...	20	...	...	...	...	...	...	...	3	2	2	2
Holroyd (Guildford and Wentworth Wards)	109	8,100	1	...	36	...	57	1	1	...	...	...	...	...	4	2	3	...
Ingleburn	110	1,990	...	...	4	...	...	...	...	...	...	...	...	...	1	1	...	...
Liverpool	111	6,610	...	...	10	...	45	1	...	...	...	...	...	...	6	6	1	...
SHIRES.																		
Hornsby	120	23,420	1	...	32	...	67	...	1	...	...	...	...	...	29	25	3	1
Warringah	123	16,870	...	...	17	...	32	1	...	...	1	...	...	...	13	4	1	...
Harbour of Port Jackson	...	.....	1	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...
Totals	.....	1,332,060	53	7	2,698	16	3,180	106	9	4	7	2	4	3	1,022	589	237	43

* Typhus Fever—Manly, 1; Paddington, 1; Woollahra, 1.

TABLE IV.—Table showing Age and Sex Incidence, and Mortality in the Metropolitan Combined District, Hunter River Combined District, Broken Hill District, and Remainder of State, from the notified cases of Cerebro-spinal Fever (Meningococcal Meningitis), Diphtheria and Membranous Croup, Infantile Paralysis (Acute Anterior Poliomyelitis),—Encephalitis Lethargica, Scarlet Fever, Typhoid Fever (including Paratyphoid), Pulmonary Tuberculosis and Puerperal Infection, *for the year ended 31st December*, 1936.

Age Period.	Typhoid and Paratyphoid.						Scarlet Fever.						Diphtheria.						Encephalitis Lethargica.					
	Incidence.			Mortality.			Incidence.			Mortality.			Incidence.			Mortality.			Incidence.			Mortality.		
	Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.		
	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.
METROPOLITAN COMBINED DISTRICT.																								
All ages	32	21	53	6	1	7	1,020	1,678	2,698	11	5	16	1,402	1,787	3,189	53	53	106	1	3	4	...	3	3
Under 1 year	...	...	...	...	...	...	4	5	9	...	...	...	24	25	49	2	...	2	...	...	...	...	...	...
1–4	...	2	2	...	...	...	245	278	523	3	...	3	463	430	893	30	27	57	...	...	...	...	...	...
5–14	7	4	11	1	...	1	601	911	1,512	7	1	8	788	991	1,779	20	25	45	...	...	...	...	...	...
15–24	10	3	13	3	1	4	72	211	283	...	3	3	54	162	216	...	...	...	...	1	1	...	...	...
25–34	9	3	12	1	...	1	54	169	223	...	...	...	39	104	143	1	...	1	...	...	...	1	1	...
35–44	2	6	8	...	...	...	32	75	107	...	1	1	16	48	64	...	1	1	...	...	...	1	1	...
45–54	2	1	3	1	...	1	9	24	33	...	...	...	14	23	37	...	...	...	1	1	2	...	...	...
55–64	1	...	1	...	...	...	3	4	7	1	...	1	4	3	7	...	...	...	1	1	2	1	1	2
65 and over	1	2	3	...	...	...	...	1	1	...	...	...	...	1	1	...	...	...	1	...	1	1	...	1
Not stated	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
HUNTER RIVER COMBINED DISTRICT.																								
All ages	5	3	8	...	...	...	46	69	115	...	...	...	344	440	784	7	2	9	...	...	...	1	...	1
Under 1 year	...	...	...	...	...	...	...	...	...	...	...	...	9	7	16	1	...	1	...	...	...	...	...	...
1–4	1	...	1	...	...	...	17	14	31	...	...	...	114	104	218	4	2	6	...	...	...	...	...	...
5–14	2	1	3	...	...	...	24	37	61	...	...	...	147	198	345	2	...	2	...	...	...	...	...	...
15–24	...	1	1	...	...	...	2	11	13	...	...	...	22	58	80	...	...	...	...	...	...	...	...	...
25–34	...	1	1	...	...	...	3	4	7	...	...	...	25	33	58	...	...	...	1	...	1	...	...	...
35–44	...	...	...	...	...	...	...	2	2	...	...	...	17	23	40	...	...	...	...	...	...	...	...	...
45–54	...	...	...	...	...	...	...	1	1	...	...	...	6	8	14	...	...	...	...	...	...	...	...	...
55–64	...	...	...	...	...	...	...	...	...	...	...	...	1	3	4	...	...	...	...	...	...	...	...	...
65 and over	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Not stated	2	...	2	...	...	...	...	...	...	...	...	...	3	6	9	...	...	...	...	...	...	...	...	...
BROKEN HILL DISTRICT.																								
All ages	5	2	7	1	...	1	4	9	13	...	...	...	5	5	10	1	1	2	...	...	...	...	...	...
Under 1 year	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1–4	1	...	1	...	...	...	1	...	1	...	...	...	...	2	2	...	1	1	...	...	...	...	...	...
5–14	...	...	...	...	...	...	2	9	11	...	...	...	5	2	7	1	...	1	...	...	...	...	...	...
15–24	...	1	1	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...
25–34	3	...	3	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35–44	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
45–54	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
55–64	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
65 and over	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Not stated	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
REMAINDER OF STATE.																								
All ages	35	29	64	6	5	11	448	665	1,113	1	9	10	1,460	1,621	3,081	57	46	103	2	1	3	1	...	1
Under 1 year	...	...	...	...	...	...	3	4	7	...	1	1	23	20	43	6	3	9	...	...	...	...	...	...
1–4	1	...	1	...	...	...	106	130	236	1	2	3	447	389	836	29	28	57	1	...	1	...	...	...
5–14	15	12	29	1	2	3	252	375	627	...	3	3	720	716	1,436	21	14	35	...	...	...	...	...	...
15–24	5	8	13	1	1	2	33	73	106	...	2	2	110	242	352	1	1	2	...	...	...	...	...	...
25–34	5	3	8	...	1	1	32	51	83	...	...	...	82	145	227	...	...	...	...	1	1	...	...	...
35–44	2	2	4	...	1	1	12	18	30	...	1	1	36	68	104	...	...	...	...	...	...	...	...	...
45–54	4	1	5	1	...	1	1	5	6	...	...	...	18	18	36	...	...	...	...	...	...	1	...	1
55–64	2	2	4	2	...	2	1	1	2	...	...	...	6	4	10	...	...	...	...	...	...	...	...	...
65 and over	1	...	1	1	...	1	...	...	...	...	...	...	1	3	4	...	...	...	...	...	...	...	...	...
Not stated	...	1	1	...	...	...	8	8	16	...	...	...	17	16	33	...	...	...	...	1	1	...	...	...

Age Period.	Cerebro-spinal Meningitis.						Pulmonary Tuberculosis.						Puerperal Infection.					
	Incidence.			Mortality.			Incidence.			Mortality.			Incidence.			Mortality.		
	Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.		
	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.
METROPOLITAN COMBINED DISTRICT.																		
All ages	1	1	2	...	...	...	614	408	1,022	370	219	589	...	237	237	...	43	43
Under 1 year	...	...	...	...	...	...	1	...	1	1	...	1	...	...	...	...	...	...
1–4	...	...	...	...	...	...	2	2	4	1	2	3	...	...	...	...	...	...
5–14	...	...	...	...	...	...	4	2	6	...	2	2	...	...	...	...	...	...
15–24	...	...	...	...	...	...	71	107	178	24	41	65	...	71	71	...	9	9
25–34	...	...	...	...	...	...	123	120	243	45	64	112	...	127	127	...	21	21
35–44	...	...	...	...	...	...	117	91	208	77	49	122	...	37	37	...	11	11
45–54	...	...	...	...	...	...	142	32	174	108	18	126	...	1	1	...	2	2
55–64	...	...	...	...	...	...	112	30	142	71	21	92	...	...	...	...	...	...
65 and over	...	...	...	...	...	...	42	24	66	44	22	66	...	...	...	...	...	...
Not stated	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...
HUNTER RIVER COMBINED DISTRICT.																		
All ages	...	...	...	...	...	...	52	35	87	38	39	77	...	9	9	...	13	13
Under 1 year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1–4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5–14	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...
15–24	...	...	...	...	...	...	5	9	14	2	8	10	...	1	1	...	3	3
25–34	...	...	...	...	...	...	7	11	18	3	9	12	...	6	6	...	6	6
35–44	...	...	...	...	...	...	12	4	16	6	6	12	...	...	...	...	2	2
45–54	...	...	...	...	...	...	11	5	19	11	6	17	...	...	...	...	...	...
55–64	...	...	...	...	...	...	1	4	14	11	5	16	...	...	...	...	...	...
65 and over	...	...	...	...	...	...	...	2	5	5	5	10	...	...	...	...	...	...
Not stated	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	...	...	...
BROKEN HILL DISTRICT.																		
All ages	...	...	...	...	...	...	6	3	9	8	3	11	...	...	...	...	2	2
Under 1 year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1–4	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...
5–14	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...
15–24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25–34	...	...	...	...	...	...	1	2	3	...	...	...	...	...	...	...	2	2
35–44	...	...	...	...	...	...	1	...	1	1	2	3	...	...	...	...	...	...
45–54	...	...	...	...	...	...	4	...	4	3	...	3	...	...	...	...	...	...
55–64	...	...	...	...	...	...	...	...	...	3	...	3	...	...	...	...	...	...
65 and over	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Not stated	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...
REMAINDER OF STATE.																		
All ages	...	...	...	...	...	...	135	119	254	176	108	278	...	80	80	...	26	26
Under 1 year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1–4	...	...	...	...	...	...	1	1	2	2	1	3	...	...	...	...	...	...
5–14	...	...	...	...	...	...	3	2	5	2	1	3	...	...	...	...	...	...
15–24	...	...	...	...	...	...	13	32	45	10	17	27	...	35	35	...	7	7
25–34	...	...	...	...	...	...	29	36	65	27	34	61	...	28	28	...	14	14
35–44	...	...	...	...	...	...	31	21	52	32	23	55	...	12	12	...	5	5
45–54	...	...	...	...	...	...	32	9	41	40	14	54	...	2	2	...	...	...
55–64	...	...	...	...	...	...	15	10	25	33	8	41	...	...	...	...	...	...
65 and over	...	...	...	...	...	...	11	8	19	24	10	34	...	...	...	...	...	...
Not stated	...	...	...	...	...	...	...	...	...	...	...	...	...	3	3	...	...	...

TABLE V.—Showing the seasonal prevalence of Cerebro-spinal Fever (Meningococcal Meningitis), Diphtheria, and Membranous Croup, Infantile Paralysis (Acute Anterior Poliomyelitis), Encephalitis Lethargica, Scarlet Fever, Typhoid Fever (including Paratyphoid), Pulmonary Tuberculosis, and Puerperal Infection in New South Wales for the year ended December 31st, 1936.

Month—1936.	Metropolitan Combined Districts.		Hunter River Combined Districts.		Broken Hill District.		Remainder of State.		Total.		Metropolitan Combined Districts.		Hunter River Combined Districts.		Broken Hill District.		Remainder of State.		Total.		Metropolitan Combined Districts.		Hunter River Combined Districts.		Broken Hill District.		Remainder of State.		Total.		Month—1936.
	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.		
	Typhoid and Paratyphoid Fever.										Encephalitis Lethargica.										Tuberculosis.											
January	1	...	...	...	...	...	4	...	5	...	...	2	...	...	...	...	...	...	...	2	99	56	15	6	...	1	31	33	145	96	January.
February	11	1	3	...	1	...	8	1	23	2	1	...	...	...	...	...	...	...	1	...	82	42	3	6	1	...	26	13	112	61	February.
March	9	5	4	...	2	1	12	1	27	7	...	...	...	...	...	...	...	...	...	...	59	51	8	5	1	1	15	19	83	76	March.
April	7	...	...	...	...	...	14	4	21	4	...	...	...	...	...	...	...	...	...	...	97	42	3	1	...	...	18	22	118	65	April.
May	2	1	...	...	3	...	12	2	17	3	2	...	...	...	...	...	...	...	2	...	99	48	14	7	...	1	22	19	135	75	May.
June	3	...	...	...	1	...	3	...	7	...	...	...	...	...	...	...	...	...	...	...	95	57	2	8	1	1	14	18	111	84	June.
July	2	...	...	...	...	...	...	...	2	...	1	1	...	...	...	...	...	1	1	2	65	65	6	8	3	2	24	24	98	99	July.
August	3	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	1	...	1	...	86	41	8	11	...	1	15	24	109	77	August.
September	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	1	...	79	49	2	9	1	...	19	28	102	86	September.
October	5	...	...	...	...	...	2	...	7	...	...	...	...	...	...	...	...	...	...	...	78	55	11	6	2	2	25	22	116	85	October.
November	1	...	...	...	...	...	6	2	7	2	...	...	...	1	...	...	1	...	1	1	75	43	10	5	...	2	24	18	109	68	November.
December	8	...	1	...	...	...	3	1	12	1	...	...	...	...	...	...	...	...	...	...	108	40	5	5	...	...	21	38	134	83	December.
Total	53	7	8	...	7	1	64	11	132	19	4	3	...	1	...	...	3	1	7	5	1,022	589	87	77	9	11	254	278	1,372	955	Total.
	Scarlet Fever.										Infantile Paralysis.										Puerperal Infection.											
January	126	...	9	...	2	...	74	3	211	3	1	...	...	...	...	...	1	...	2	...	37	3	...	1	...	...	12	2	49	6	January.
February	115	1	10	...	...	...	42	...	167	1	1	...	...	...	...	...	...	1	1	...	24	3	1	1	...	...	3	2	28	6	February.
March	155	...	7	...	...	...	70	1	232	1	...	...	...	...	...	...	2	1	2	1	31	4	1	...	...	...	18	3	50	7	March.
April	140	2	9	...	...	...	83	...	232	2	1	...	1	...	...	...	...	...	2	...	18	...	2	1	...	...	6	3	26	4	April.
May	147	1	4	...	...	...	97	...	248	1	2	...	...	...	...	...	1	...	3	...	15	4	...	1	...	...	5	4	20	9	May.
June	142	2	10	...	1	...	59	1	212	3	1	3	...	...	...	...	1	...	2	3	15	2	...	1	...	1	6	2	21	6	June.
July	241	...	7	...	...	...	66	...	314	...	1	...	...	...	...	...	...	...	1	...	20	8	...	...	...	...	3	3	23	11	July.
August	310	...	13	...	...	...	83	1	406	1	1	...	...	...	...	...	...	...	1	...	17	2	2	3	...	...	4	1	23	6	August.
September	389	4	10	...	...	...	94	1	493	5	...	...	...	...	...	...	4	2	2	...	18	2	1	...	...	...	8	2	27	4	September.
October	346	1	21	...	...	...	111	2	478	3	1	1	...	...	...	...	5	...	6	1	14	4	1	1	...	...	4	2	19	7	October.
November	306	1	7	...	...	...	158	...	471	1	...	...	...	...	...	...	1	...	1	...	15	2	1	2	...	...	6	1	22	5	November.
December	281	4	8	...	...	...	176	1	465	5	...	...	...	...	...	...	...	...	...	...	13	9	...	...	...	1	5	1	18	11	December.
Total	2,638	16	115	...	3	...	1,113	10	3,939	26	9	4	1	...	...	...	13	2	23	6	237	43	9	11	...	2	80	26	326	82	Total.
	Diphtheria.										Cerebro-spinal Meningitis.																				
January	231	9	155	2	...	...	225	5	611	16	2	...	1	...	...	...	...	...	3	...	January.										
February	255	8	149	1	...	...	273	8	677	17	...	...	...	...	...	...	...	...	...	...	February.										
March	511	12	121	...	...	...	520	12	1,152	24	...	...	...	...	...	...	...	...	...	...	March.										
April	480	14	85	1	2	...	586	22	1,153	37	2	1	...	...	...	...	...	...	2	1	April.										
May	380	12	50	4	...	...	447	16	877	32	...	...	...	...	...	...	...	...	...	...	May.										
June	277	13	48	...	...	...	230	11	555	24	...	...	...	...	...	...	...	...	...	...	June.										
July	256	3	36	1	1	...	204	9	497	13	...	...	...	...	...	...	1	...	1	...	July.										
August	188	7	30	...	...	...	148	8	366	15	2	...	...	...	...	...	...	...	2	...	August.										
September	156	7	31	...	...	...	144	3	341	10	...	...	...	...	...	...	1	...	1	...	September.										
October	163	5	22	...	...	...	99	5	274	10	...	...	...	...	...	...	...	1	...	1	October.										
November	158	8	25	...	...	...	110	3	293	11	...	...	...	...	...	...	...	...	...	...	November										
December	134	8	32	...	7	2	95	1	268	11	1	1	...	...	...	...	1	1	2	2	December.										
Total	3,189	106	784	9	10	2	3,081	103	7,064	220	7	2	1	...	...	...	3	2	11	4	Total.										

REMAINDER OF STATE.—Return showing the number of cases, &c., from Country Shires.

Shires.	Estimated Mean Population.	Typhoid and Paratyphoid.		Scarlet Fever.		Diphtheria.		Infantile Paralysis.		Cerebro-spinal Meningitis.		Encephalitis Lethargica.		Puerperal Infection.		Pulmonary Tuberculosis.	
		C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
SHIRES.																	
Abercrombie 361	4,370	...	...	7	...	10	1	...	...	...	...	...	...	...	...	...	1
Amaroo 506	2,850	...	...	2	...	16	1	...	...	...	...	...	...	1	...	...	...
Apsley 307	3,020	...	...	3	...	1	...	...	...	...	...	...	...	...	...	...	1
Ashford 458	4,000	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Bannockburn 459	3,440	...	...	3	...	1	1	...	...	...	...	...	...	...	2	...	...
Barraba 460	2,090	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Baulkham Hills 118	8,340	...	...	7	...	10	...	...	...	...	...	...	...	1	...	...	1
Bellingen 161	6,190	...	...	...	...	7	...	...	...	...	...	...	...	...	...	...	2
Berrigan 707	4,650	2	..	3	...	51	2	...	...	...	...	...	...	...	...	...	2
Bibbenluke 405	2,920	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1
Blacktown 119	14,260	...	...	27	...	32	2	...	...	...	...	...	...	...	...	13	6
Bland 564	12,510	...	...	1	...	34	1	...	...	...	...	...	...	...	...	...	7
Blaxland 362	8,540	...	...	4	...	2	...	...	...	...	...	...	...	...	...	...	2
Blue Mountains 363	7,000	1	...	16	...	4	1	...	...	...	...	...	...	...	...	25	23
Bogan 654	1,950	...	...	...	...	5	...	...	...	...	...	...	...	...	...	...	...
Boolooroo 603	3,570	...	...	1	...	2	1	...	...	...	...	...	...	...	...	...	1
Boomi 604	3,220	...	...	7	...	6	...	...	...	...	...	...	...	...	...	1	2
*Boree 507	6,980	...	...	...	...	18	...	...	...	...	...	...	...	1	...	...	3
Bulli 269	15,280	...	...	15	...	52	...	...	...	...	...	1	...	2	...	9	7
Burrangong.....565	6,010	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	2
Byron 162	8,030	...	...	...	...	13	...	...	...	...	...	...	...	...	...	...	2
Cambewarra 170	1,180	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Canoblas 364	9,090	...	...	4	...	33	2	...	...	...	...	...	...	...	1	...	2
Carrathool 708	5,850	...	...	4	...	2	...	...	...	...	...	...	...	...	...	...	3
Clyde 271	1,900	...	...	...	1	4	1	...	...	...	...	...	...	...	...	3	1
Cobborah.....508	5,370	...	...	19	...	1	...	...	...	...	...	...	...	...	...	...	2
Cockburn.....461	5,070	...	...	6	...	28	...	...	...	...	...	...	...	1	2	...	...
Colo 365	5,390	...	...	8	...	5	2	...	...	...	...	...	...	...	...	1	1
Conargo 709	1,210	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Coolah 366	2,200	5	1	...	...	1	...	...	...	...	...	...	...	...	...	...	1
Coolamon 710	7,200	...	...	5	...	13	1	...	...	...	...	...	...	...	...	...	...
Coonabarabran 605	6,970	...	...	1	...	12	...	...	...	...	...	...	...	...	...	4	1
Copmanhurst 163	3,500	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Coreen 711	3,410	...	...	1	...	22	...	1	...	...	...	...	...	...	...	...	...
Crookwell 367	6,480	...	...	...	...	11	...	...	...	...	...	...	...	...	...	...	1
Cudgegong 370	5,830	...	...	45	...	55	2	...	...	...	...	...	...	1	...	...	1
Culcairn 712	5,520	...	...	...	...	6	2	...	...	...	...	...	...	...	...	...	...
Dalgety 406	3,640	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	2
Demondrille 466	3,310	...	...	3	...	6	3	...	...	...	...	...	...	...	...	...	...
Dorrigo 164	11,100	...	...	2	...	9	1	...	...	...	...	...	...	...	...	2	...
Dumaresq 308	4,390	...	...	2	...	10	1	...	...	...	...	...	...	2	1	...	1
Erina 226	17,590†	...	...	29	...	25	1	...	...	...	...	...	...	2	...	1	3
Eurobodalla 272	5,360	...	...	...	...	5	...	...	...	...	...	...	...	2	...	3	2
Gilgandra 509	5,500	...	...	...	...	42	...	...	...	...	...	...	...	...	...	1	...
Gloucester 227	4,550	...	...	3	...	6	1	...	...	...	...	...	...	...	...	1	4
Goobang 510	6,880	...	...	3	...	5	...	...	...	...	...	...	...	...	...	2	...
Goodradigbee 407	3,580	...	...	1	...	2	...	...	...	...	...	...	...	...	...	2	1
Gostwyck 309	4,260	...	...	...	...	8	...	...	...	...	...	...	...	...	...	...	...
Gundagai.....563	5,410	...	...	6	...	55	1	...	...	...	...	...	...	...	...	...	1
Gundurimba 165	4,690	...	...	1	...	3	...	...	...	...	...	...	...	...	...	1	2
Gunning 408	3,220	...	...	2	...	3	...	...	...	...	...	...	...	...	...	...	1
Guyra 310	6,650	...	...	15	1	7	3	...	...	...	...	...	...	...	...	...	1
Gwydir 462	1,850	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Harwood 166	4,640	...	...	2	...	10	...	...	...	...	...	...	...	...	...	1	2
Hastings 228	9,520	...	...	4	...	8	...	...	...	...	...	...	...	...	...	1	2
Holbrook 568	2,700	...	...	...	..	4	...	...	...	...	...	...	...	...	...	...	...
Hume 569	5,370	1	1	4	...	13	...	...	...	...	...	...	...	...	...	...	...
Illabo 570	2,910	...	...	1	...	4	...	...	...	...	...	...	...	1	1	...	...
Illawarra Central ...257	9,680	...	...	20	...	27	...	...	...	...	...	...	...	...	...	4	4
Imlay 273	4,870	...	...	...	...	16	...	...	...	...	...	1	...	...	...	...	2
Jemalong.....511	4,480	...	...	1	...	8	...	...	...	...	...	...	...	...	...	...	...
Jerilderie 722	1,820	...	...	...	...	4	...	...	...	...	...	...	...	...	...	1	...
Jindalee 571	2,580	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...
Kyeamba 572	4,630	...	...	2	...	10	1	...	...	...	...	...	...	1	...	...	2
Kyogle 167	12,220	1	...	10	...	50	2	...	...	...	...	...	...	2	...	1	1
Lachlan 655	8,320	...	...	2	...	14	...	...	...	...	...	...	...	...	...	1	...
Liverpool Plains.....463	5,400	1	1	3	...	15	2	...	...	...	...	...	...	...	1	...	1
Lockhart 713	5,620	...	...	1	...	15	...	1	...	...	...	...	...	...	...	...	...
Lyndhurst 368	7,430	...	...	5	1	6	1	...	...	...	...	...	...	1	1	...	1
Macintyre 311	1,650	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...
Macleay 168	8,880	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2
Macquarie 169	4,600	...	...	...	...	12	1	...	...	...	...	...	...	1	1	...	1
Mandowa.....464	1,990	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...
Manning 230	14,290	...	...	...	...	36	4	...	...	...	...	...	...	1	1	...	2
Marthaguy 656	2,170	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...
Merriwa 371	3,160	...	...	24	1	14	1	...	...	...	...	...	...	...	...	...	...
Mitchell 573	4,210	...	...	1	...	4	...	...	...	...	...	...	...	...	...	...	...
Monaro 409	2,620	...	...	1	...	2	...	...	...	...	...	...	...	...	...	...	1
Mulwaree.....410	7,250	...	...	5	...	4	...	...	...	...	...	...	...	...	...	...	2
Mumbulla 274	4,710	...	...	3	...	27	...	...	...	...	...	...	...	...	...	...	1
Murray 714	3,210	...	...	1	...	...	...	...	...	...	...	...	...	...	...	2	2
Murrumbidgee 715	840	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

*Braidwood (see under Tallaganda Shire: amalgamated September, 1936.) † Mean population includes Gosford Municipality, constituted 24th October, 1936.

REMAINDER OF STATE.—Return showing the number of cases, &c., from Country Shires—*continued.*

Shires.	Estimated Mean Population.	Typhoid and Paratyphoid.		Scarlet Fever.		Diphtheria.		Infantile Paralysis.		Cerebro-spinal Meningitis.		Encephalitis Lethargica.		Puerperal Infection.		Pulmonary Tuberculosis.	
		C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
SHIRES—*continued.*																	
Murrungal 574	2,610	...	...	2	...	4	1	...	...	...	...	...	...	...	...	...	...
Muswellbrook 231	4,130	...	...	3	...	21	...	...	...	...	...	...	...	...	...	...	1
Nambucca 169	7,780	...	...	...	...	4	...	1	...	...	...	...	...	1	...	2	...
Namoi 606	8,160	...	...	12	...	24	...	...	...	...	...	...	...	...	1	2	...
Narraburra .....,...575	4,350	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	1
Nattai 275	3,790	...	...	5	...	5	1	...	...	...	...	...	...	...	...	...	3
Nepean 121	3,480	...	...	3	...	7	...	...	...	...	...	...	...	...	...	2	1
Nundle.....465	1,830	...	...	1	1	8	...	...	...	...	...	...	...	...	...	...	...
Nymboida 170	2,860	1	...	...	...	3	1	...	...	...	...	...	...	...	...	...	1
Oberon.....372	3,020	...	...	1	...	5	...	...	...	...	...	...	...	...	...	...	1
Orara 171	2,200	...	...	...	...	3	...	...	...	...	...	...	...	1	...	...	...
Patrick Plains 232	6,680	1	...	...	...	27	1	...	...	...	...	...	...	...	...	...	...
Peel 466	6,620	1	1	7	...	34	...	...	...	...	...	...	...	1	...	1	...
Rylstone 373	5,750	...	...	6	...	14	1	...	...	...	...	...	...	1	1	...	1
Severn 312	6,320	...	...	5	...	2	1	...	...	...	1	...	...	...	1	1	...
Stroud 234	6,600	1	...	...	...	1	...	...	...	...	...	...	...	...	...	2	...
Sutherland 122	14,500	1	...	58	...	37	2	...	...	...	...	...	...	7	...	5	6
Talbragar 512	4,020	...	...	...	...	13	2	1	...	...	...	...	...	...	...	2	...
Tallaganda 276	3,610	...	...	4	...	2	...	...	...	...	...	...	...	...	...	...	...
Tamarang 467	3,030	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...
Tenterfield 313	5,400	...	...	...	...	12	...	...	...	...	...	...	...	...	...	...	...
Terania 172	7,790	...	...	2	...	20	...	...	...	...	...	...	...	...	...	2	...
Timbrebongie 513	4,460	...	...	5	...	8	...	...	...	...	...	...	...	...	...	...	...
Tintenbar 173	5,340	...	...	2	...	10	...	...	...	...	...	...	...	...	...	1	...
Tomki 174	4,050	...	...	3	...	1	...	...	...	...	...	...	...	...	...	...	...
Tumbarumba 576	3,000	...	...	...	...	7	...	...	...	...	...	...	...	...	...	1	1
Tumut 567	7,930	...	...	2	...	37	5	...	...	...	...	...	...	1	1	2	2
Turon 374	4,460	...	...	4	...	6	...	...	...	...	...	...	...	...	...	...	1
Tweed 175	13,780	...	...	1	...	19	1	...	...	...	...	...	...	1	...	1	...
Upper Hunter 236	4,870	...	...	5	...	20	1	...	...	...	...	...	...	...	1	...	2
Urana 716	3,310	...	...	...	...	18	...	...	...	...	...	...	...	...	...	...	...
Wade 731	9,010	...	...	18	...	42	1	...	...	...	...	...	...	...	...	...	2
Wakool 717	4,390	...	...	8	...	5	...	...	...	...	...	...	...	...	...	3	1
Walgett 657	3,700	...	...	1	...	2	1	...	...	...	...	...	...	...	...	...	1
Wallarobba 237	5,250	...	...	2	...	5	1	...	...	...	...	...	...	...	...	...	1
Waradgery 718	1,100	2	...	2	...	1	...	...	...	...	...	...	...	...	...	...	...
Warrah 468	2,230	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...
Waugoola 375	6,180	...	...	9	...	12	...	...	...	...	...	...	...	...	...	1	1
Weddin 577	4,050	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...
Willimbong 732	8,110	...	...	6	...	17	...	...	...	...	...	...	...	1	...	2	1
Windouran 719	810	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wingadee 658	3,510	...	...	...	...	13	1	...	...	...	...	...	...	...	...	...	2
Wingecarribee 277	6,760	...	1	11	...	8	...	...	...	...	...	...	...	...	...	...	1
Wollondilly 278	6,520	...	...	2	...	4	...	...	...	...	...	...	...	...	...	18	4
Woodburn 176	4,530	...	...	6	...	10	1	...	...	...	...	...	...	...	...	...	...
Woy Woy 249	2,660	...	...	9	...	...	...	...	...	...	...	...	...	1	...	2	3
Wyaldra 376	2,440	...	...	8	...	3	1	...	...	...	...	...	...	...	...	...	2
Yallaroi 469	4,430	...	...	...	...	...	...	...	...	...	..	...	...	2	...	...	1
Yanko 721	5,330	...	...	8	...	26	...	...	...	...	...	...	...	...	...	2	...
Yarrowlumla 411	2,150	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	1
Total Shires	698,030	20	5	567	5	1,487	66	4	...	...	1	2	...	37	16	136	162
WESTERN DIVISION (UNINCORPORATED) POLICE DISTRICTS.																	
Balranald..... ...	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bourke..... ...	.....	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Brewarrina	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Broken Hill..... ...	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cobar	.....	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...
Hay	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hillston	.....	...	...	...	...	5	...	...	...	...	...	...	...	...	...	...	...
Menindie	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mitchell	.....	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Nyngan	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Walgett	.....	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Wentworth	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wilcannia	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total 780	19,080	...	...	...	...	11	...	...	...	...	...	...	...	...	...	...	...
Migratory	5,066	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lord Howe Island ...800	163	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Outside the State—																	
Federal Capital Territory	.....	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Queensland	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Victoria	.....	...	...	25	...	26	...	...	...	...	...	...	...	...	...	...	...
South Australia	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total, N.S.W. ...	2,667,839	132	19	3,939	26	7,064	220	23	11	11	4	7	5	326	82	1,372	955

TABLE II.—Showing the number of notified cases of, and deaths from Cerebro-spinal Fever (Meningococcal Meningitis), Diphtheria or Membranous Croup, Encephalitis Lethargica, Infantile Paralysis (Acute Anterior Poliomyelitis), Scarlet Fever, Typhoid Fever, including Paratyphoid, Pulmonary Tuberculosis, and Puerperal Infection in the HUNTER RIVER COMBINED DISTRICT for the year ended 31st December, 1936.

Municipality or Shire.	Estimated Mean Population.	Typhoid and Paratyphoid.		Scarlet Fever.		Diphtheria.		Infantile Paralysis.		Cerebro-spinal Meningitis.		Encephalitis Lethargica.		Puerperal Infection.		Pulmonary Tuberculosis.	
		C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
MUNICIPALITIES.																	
Adamstown.....201	5,030	1	...	2	...	18	...	...	...	...	...	...	...	...	...	4	...
Carrington 202	3,190	...	...	...	...	54	...	...	...	...	...	...	...	...	...	2	1
Cessnock 247	14,510	...	...	2	...	59	...	...	...	...	...	...	...	...	1	7	3
Hamilton.....203	19,770	...	...	16	...	62	...	...	...	...	...	...	1	1	1	6	5
Lambton 205	4,540	...	...	2	...	5	1	...	...	...	...	...	...	...	...	1	2
Maitland East 214	4,300	2	...	9	...	9	...	...	...	...	...	...	...	...	...	1	2
Maitland West 215	8,240	1	...	5	...	31	...	...	...	...	...	...	...	1	...	3	2
Merewether 206	8,640	...	...	4	...	38	...	...	...	...	...	...	...	...	...	5	5
Morpeth 216	1,040	...	...	2	...	5	...	...	...	...	...	...	...	...	...	1	...
Newcastle 200	13,910	1	...	8	...	48	...	...	...	...	...	...	...	1	...	11	8
New Lambton 204	6,630	1	...	5	...	14	...	...	...	...	...	...	...	1	1	1	2
Raymond Terrace ...219	960	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...
Singleton 221	3,770	...	...	1	...	25	1	...	...	...	...	...	...	...	...	1	2
Stockton 207	5,740	...	...	...	...	41	2	...	...	...	...	...	...	...	...	6	7
Wallsend 208	7,150	...	...	5	...	29	...	...	...	...	...	...	...	...	...	5	3
Waratah 209	21,180	...	...	21	...	96	2	...	...	...	...	...	...	1	3	7	9
Wickham.....210	12,140	...	...	7	...	73	...	...	...	...	...	...	...	...	...	5	2
SHIRES.																	
Bolwarra 224	3,660	...	...	1	...	5	...	...	...	...	...	...	...	...	...	1	...
Kearsley 248	27,640	...	...	6	...	58	1	...	...	...	...	...	...	1	3	9	11
Lake Macquarie ...229	31,020	...	...	13	...	85	1	1	...	1	...	...	...	3	1	8	11
Port Stephens.....233	4,260	2	...	...	...	6	1	...	...	...	...	...	...	...	...	1	2
Tarro 235	9,880	...	...	6	...	22	...	...	...	...	...	...	...	...	1	1	...
Harbour of Port Hunter..... ...	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Totals	217,200	8	...	115	...	784	9	1	...	1	...	...	1	9	11	87	77

TABLE III.—Showing the number of notified cases of, and deaths from Cerebro-spinal Fever (Meningococcal Meningitis), Diphtheria or Membranous Croup, Encephalitis Lethargica, Infantile Paralysis (Acute Anterior Poliomyelitis), Scarlet Fever, Typhoid Fever (including Paratyphoid), Pulmonary Tuberculosis, and Puerperal Infection, in the REMAINDER OF STATE for the year ended 31st December, 1936.

Municipality.	Estimated Mean Population.	Typhoid and Paratyphoid.		Scarlet Fever.		Diphtheria.		Infantile Paralysis.		Cerebro-spinal Meningitis.		Encephalitis Lethargica.		Puerperal Infection.		Pulmonary Tuberculosis.	
		C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
MUNICIPALITIES.																	
Aberdeen 211	1,000	...	...	...	...	9	...	...	...	...	...	...	...	...	...	...	...
Albury 550	11,030	1	...	29	...	51	1	...	...	...	...	...	...	...	...	2	3
Armidale 300	7,010	...	...	4	...	23	...	...	...	...	...	...	...	1	...	2	3
Ballina 150	3,130	...	...	1	...	6	...	...	...	...	...	...	...	...	...	...	...
Balranald 750	1,330	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Barraba 450	1,490	...	...	...	...	1	...	...	...	...	...	...	...	2	...	...	...
Bathurst 350	10,670	1	...	12	1	39	...	...	...	...	...	...	...	...	...	2	1
Bega.....250	2,480	...	...	2	...	30	...	...	...	...	...	...	...	...	...	2	1
Berry 251	2,750	...	...	1	...	3	...	...	...	...	...	...	...	...	...	1	1
Bingara 451	1,490	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...
Blackheath 377	1,530	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	3
Bombala 400	970	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bourke.....751	1,860	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...
Bowral 252	3,130	...	...	11	...	1	...	...	...	...	...	...	...	...	...	...	1
Brewarrina 752	860	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Broken Hill.....753	27,120	8	1	13	...	10	2	...	...	...	...	...	...	...	2	9	11
Broughton Vale ...254	330	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Burrowa 551	1,579	...	...	4	...	12	1	...	...	...	...	...	...	...	...	...	1
Camden 255	2,510	...	...	1	...	2	...	...	...	...	...	...	...	1	...	...	...
Campbelltown 106	2,950	...	...	5	...	5	...	...	...	...	...	...	...	...	...	...	2
Casino 151	5,850	...	...	...	...	2	...	...	...	...	...	...	...	...	...	1	1
Castlereagh 107	1,190	...	...	2	...	3	...	...	...	...	...	...	...	...	...	...	1
Cobar 754	1,290	1	...	...	...	7	1	...	...	...	...	...	...	1	...	...	...
Condobolin 650	2,750	...	...	2	...	15	...	...	...	...	...	...	...	...	...	...	...
Cooma 401	2,060	...	...	2	...	2	...	...	...	...	...	...	...	...	...	...	...
Coonamble 651	2,810	...	...	...	...	6	...	...	...	...	...	...	...	2	1	...	1
Cootamundra 552	4,870	...	...	2	...	24	...	...	...	...	...	...	...	1	...	2	1

REMAINDER OF STATE.—Return showing the number of Cases, etc., from Country Municipalities—*continued*.

Municipality or Shire.	Estimated Mean Population. 1936.	Typhoid and Paratyphoid.		Scarlet Fever.		Diphtheria.		Infantile Paralysis.		Cerebro-spinal Meningitis.		Encephalitis Lethargica.		Puerperal Infection.		Pulmonary Tuberculosis.	
		C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
MUNICIPALITIES—*continued*.																	
Corowa 790	2,890	...	...	5	...	34	...	...	...	...	...	...	...	...	...	1	1
Cowra 353	5,300	...	...	3	...	15	...	...	...	...	...	...	...	...	...	...	3
Deniliquin 701	3,350	...	...	12	...	7	1	...	...	...	...	...	...	...	...	...	2
Dubbo 500	8,540	1	...	14	...	76	1	...	...	...	...	...	...	...	...	3	3
Dungog 212	2,220	...	...	...	...	11	...	...	...	...	...	...	...	...	...	3	2
Forbes 501	5,540	...	...	2	...	56	3	...	...	...	...	...	...	...	1	1	2
Gerringong 256	900	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Glen Innes 301	5,450	...	...	15	...	24	1	...	...	...	...	...	...	1	...	...	...
Gosford* 240	.....	...	...	3	...	...	...	...	...	...	...	...	...	...	...	3	1
Goulburn 402	15,190	1	...	58	...	45	2	...	...	...	...	...	...	1	...	6	3
Grafton 153	6,970	5	1	5	...	7	...	...	...	...	...	...	...	1	...	5	4
Grafton South 154	2,300	...	...	...	...	5	...	...	...	...	...	...	...	...	...	...	1
Grenfell 553	2,540	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...
Gulgong 355	1,790	...	...	2	...	1	...	...	...	...	...	...	...	1	...	...	...
Gunnedah 452	3,880	...	...	3	...	17	...	...	...	...	...	...	...	...	...	2	2
Hay 702	3,290	2	...	39	...	2	1	7	...	...	...	...	...	...	...	3	...
Hillston 703	1,170	...	...	5	...	5	...	...	...	...	...	...	...	...	...	...	...
Illawarra North ...258	8,130	...	...	15	...	27	...	...	...	...	...	...	...	...	...	...	2
Inverell 303	5,670	...	...	1	...	7	...	...	...	...	...	...	...	...	...	...	1
Jamberoo 259	1,130	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...
Junee 555	4,320	...	...	17	...	23	...	...	1	...	...	...	...	1	1	...	1
Katoomba 356	6,760	...	...	7	...	5	...	...	...	...	...	1	...	...	...	8	9
Kempsey 155	5,150	...	...	5	...	5	...	...	...	...	...	...	...	4	...	2	2
Kiama 260	2,510	10	...	1	...	7	...	...	...	...	...	...	...	...	...	...	...
Lismore 156	12,560	2	1	13	1	38	1	...	...	...	...	...	...	5	1	1	4
Lithgow 357	13,560	...	...	15	...	2	...	...	1	...	...	...	...	...	...	6	3
Maclean 157	1,650	...	...	...	...	5	...	...	...	...	...	...	...	1	...	...	...
Manilla 453	1,860	1	1	5	...	1	...	...	...	...	...	...	...	1	...	...	...
Mittagong 261	1,820	...	...	2	...	1	...	...	...	...	...	...	...	...	...	...	...
Moama.....705	790	...	...	3	...	...	...	...	...	...	...	...	...	...	...	2	...
Molong.....502	1,610	...	...	1	...	57	1	...	...	...	...	...	...	...	...	...	...
Moree 600	4,640	1	...	6	...	34	...	...	...	...	...	...	...	...	...	...	...
Mudgee 358	4,110	...	...	20	1	98	2	...	...	...	...	...	...	...	...	...	2
Mullumbimby 158	1,400	...	...	...	...	...	...	...	...	...	...	...	...	4	1	6	...
Murrumburrah 556	2,820	...	...	2	1	2	...	...	...	...	...	...	...	...	...	...	...
Murrurundi 454	1,220	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Murwillumbah 159	4,310	1	...	1	...	19	...	...	...	...	...	...	...	...	...	...	...
Muswellbrook 217	3,360	...	...	...	...	78	...	...	...	...	...	...	...	...	...	...	...
Narrabri 601	3,080	...	...	16	...	5	2	1	...	...	...	...	...	1	...	1	2
Narrabri West 602	1,060	...	...	9	...	5	...	...	...	...	...	...	...	...	...	...	...
Narrandera 706	4,250	...	...	4	...	70	...	...	...	...	...	...	...	...	...	...	...
Narromine 503	1,710	1	...	4	...	7	1	...	...	...	...	...	...	...	...	2	2
Nowra 263	3,150	...	...	5	...	9	...	...	...	...	...	...	...	...	...	...	...
Nyngan 652	1,620	...	...	...	...	28	...	...	...	...	...	...	...	...	2	...	...
Orange 359	9,970	...	...	14	...	103	2	...	...	...	...	...	...	1	...	2	...
Parkes 504	6,050	5	...	1	...	11	1	...	...	...	...	...	...	1	1	12	5
Peak Hill.....505	1,270	...	...	...	...	3	...	1	...	...	...	...	...	...	...	...	1
Penrith 112	4,050	...	...	13	...	29	2	...	...	...	...	...	...	1	...	1	1
Picton 264	1,060	...	...	...	...	...	...	...	...	...	...	...	...	1	...	4	2
Port Macquarie 218	1,890	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1
Queanbeyan 403	4,130	...	...	1	...	22	1	...	...	...	...	1	...	...	...	...	...
Quirindi 455	2,670	...	...	2	...	6	1	...	...	...	...	...	...	...	...	...	1
Richmond 114	2,490	...	...	...	...	2	...	...	...	...	...	...	...	...	1	1	1
Scone 220	2,270	...	...	8	...	8	...	...	...	1	1	...	...	...	...	1	2
Shellharbour 265	1,990	...	...	2	...	2	...	...	...	...	...	...	...	...	...	1	...
Shoalhaven South ...266	820	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
St. Mary's 115	3,090	...	...	2	...	19	1	...	...	...	...	...	...	...	...	...	...
Tamworth 456	10,470	...	...	37	...	168	5	...	...	...	...	...	...	...	...	2	4
Taree 222	4,930	...	...	...	...	22	1	...	...	...	...	...	...	...	...	...	...
Temora 557	4,080	...	...	...	...	7	1	...	...	...	...	...	...	...	1	1	...
Tenterfield 304	2,700	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	2
Ulladulla 267	1,520	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	1
Ulmarra 160	1,980	2	...	2	...	6	...	...	...	1	...	...	...	...	...	...	...
Uralla 305	1,100	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...
Wagga Wagga 559	12,230	1	...	10	...	28	...	...	...	...	...	...	...	2	...	6	4
Walcha 306	1,560	...	...	4	...	...	...	...	...	...	...	...	...	...	...	1	...
Warren 653	1,670	6	1	2	...	2	...	...	...	...	...	...	...	1	...	...	...
Wellington 360	4,420	...	...	1	...	13	...	...	...	...	...	...	...	2	...	4	2
Wentworth 755	860	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Wilcannia 756	650	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Windsor 117	3,360	...	...	4	...	6	...	...	...	...	...	...	..	...	...	1	3
Wingham 223	1,730	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Wollongong.....268	12,480	...	...	35	1	19	...	...	...	...	...	...	...	...	...	5	6
Yass 404	2,980	1	1	5	...	17	2	...	...	...	...	...	...	1	2	1	...
Young 562	4,170	...	...	1	...	...	...	...	...	...	...	...	...	...	...	2	...
Total Municipalities†...	396,240	51	6	559	5	1,593	39	9	2	3	1	1	1	43	12	127	122

* Gosford Municipality constituted 24th October, 1936. Mean population for 1936 included with Erina Shire. † Including Broken Hill.

SUMMARY.

District.	Typhoid Fever.		Scarlet Fever.		Diph-theria.		Infantile Paralysis.		Cerebro-spinal Meningitis.		Encephalitis Lethargica.		Puerperal Infection		Pulmonary Tuberculous.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Metropolitan Combined Sanitary District (Table 1).	53	7	2,698	16	3,189	106	9	4	7	2	4	3	237	43	1,022	589
Hunter River Combined District (Table 2).	8	...	115	...	784	9	1	...	1	...	...	1	9	11	87	77
Broken Hill District	8	1	13	...	10	2	...	...	...	...	...	...	...	2	9	11
Remainder of State—																
Municipalities	43	5	546	5	1,583	37	9	2	3	1	1	1	43	10	118	111
Shires	20	5	567	5	1,487	66	4	...	...	1	2	...	37	16	136	162
Police Districts ...	...	1	...	...	11	...	...	...	...	...	...	...	...	...	...	5
Lord Howe Island	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Totals	132	19	3,939	26	7,064	220	23	6	11	4	7	5	326	82	1,372	955

TABLE VI.—Showing the number of Cases of Infectious Diseases notified in the State of New South Wales during the years 1898 to 1936, inclusive, and the number of deaths therefrom.

Year.	Population.	Typhoid Fever.*		Scarlet Fever.*		Diphtheria.*		Plague.†		Infantile Paralysis.‡		Cerebro-spinal Meningitis.§		Encephalitis Lethargica.‖		Pulmonary Tuberculosis.¶		Puerperal Infection.**	
		Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
1898	1,323,130	3,302	387	6,342	83	1,493	169	...	...	...	...	...	...	...	...	...	...	...	...
1899	1,344,080	2,783	347	1,389	25	741	60	...	...	...	...	...	...	...	...	...	...	...	...
1900	1,364,590	3,442	398	895	9	726	63	303	103	...	...	...	...	...	...	...	...	...	...
1901	1,376,199	2,702	291	1,288	16	922	131	...	...	...	...	...	...	...	...	...	...	...	...
1902	1,397,858	2,624	276	2,010	61	757	74	140	41	...	...	...	...	...	...	...	...	...	...
1903	1,416,879	4,855	475	5,358	87	1,214	134	2	...	...	...	...	...	...	...	...	...	...	...
1904	1,440,919	2,370	249	4,056	50	1,584	156	12	6	...	...	...	...	...	...	146	...	...	...
1905	1,469,153	2,226	239	1,773	21	1,118	102	56	21	...	...	...	...	...	...	128	...	...	...
1906	1,498,609	2,373	271	3,085	42	1,219	100	20	8	...	...	...	...	...	...	118	...	...	...
1907	1,531,980	1,972	189	2,570	26	1,376	133	51	20	...	...	...	...	...	...	161	...	...	...
1908	1,560,026	2,607	307	2,755	40	2,001	123	6	3	...	...	...	...	...	...	112	...	...	...
1909	1,596,685	2,615	287	7,178	30	2,419	166	24	7	...	...	...	...	...	...	196	...	...	...
1910	1,638,220	2,714	294	1,642	23	4,989	207	...	...	...	...	...	...	...	...	184	...	...	...
1911	1,698,735	1,864	184	2,618	11	4,784	226	...	...	...	...	...	...	...	...	222	...	...	...
1912	1,778,962	2,126	236	662	11	5,440	253	...	...	...	...	...	...	...	...	265	...	...	...
1913	1,832,546	2,187	236	1,120	23	6,380	310	...	...	47	10	...	...	...	...	228	...	...	...
1914	1,862,028	2,284	250	3,207	21	5,831	247	...	...	79	14	...	...	...	...	293	...	...	...
1915	1,868,644	1,941	219	8,335	97	5,838	264	...	...	63	11	50	33	...	...	361	86	...	...
1916	1,846,736	1,742	209	5,759	107	6,588	309	...	...	311	21	309	145	...	...	1,499	666	...	...
1917	1,886,701	1,091	103	2,255	27	5,805	247	...	...	16	12	197	98	...	...	1,319	584	...	...
1918	1,928,174	810	112	1,308	15	5,151	221	...	...	50	12	120	80	...	...	1,308	586	...	...
1919	2,000,173	857	106	959	10	2,826	114	...	...	8	3	28	23	...	...	1,102	678	...	...
1920	2,099,763	1,016	132	937	24	5,043	263	...	...	45	10	34	27	...	...	1,509	674	...	...
1921	2,128,786	949	129	1,060	8	6,854	306	2	1	184	22	30	28	...	...	1,240	791	...	...
1922	2,174,688	706	99	1,153	11	4,094	207	33	9	33	5	21	22	...	...	1,045	517	...	...
1923	2,211,106	873	104	2,623	13	3,480	176	1	1	104	8	27	22	...	...	1,218	657	...	...
1924	2,256,649	768	97	3,421	29	4,364	222	...	...	108	6	29	38	...	...	1,096	730	...	...
1925	2,300,081	533	80	3,043	27	3,004	118	...	...	57	14	37	27	...	...	1,195	617	...	...
1926	2,349,401	698	80	4,755	53	3,579	147	...	...	81	21	32	23	...	...	1,265	705	...	...
1927	2,401,884	460	68	8,369	113	4,059	179	...	...	25	4	25	10	3	27	1,158	632	...	...
1928	2,446,874	453	60	5,531	105	3,835	168	...	...	30	2	31	8	18	23	1,212	815	...	...
1929	2,479,147	438	45	5,219	78	4,274	215	...	...	241	29	28	10	26	30	1,215	1,152	44	79
1930	2,502,039	380	48	4,400	54	4,051	176	...	...	30	6	43	12	14	20	1,917	1,022	269	82
1931	2,519,300	340	35	4,477	36	4,432	168	...	...	103	10	30	9	20	16	1,588	1,014	319	83
1932	2,542,034	233	31	4,905	57	4,310	160	...	...	384	44	43	7	12	18	1,485	969	292	59
1933	2,613,776	188	28	4,259	55	3,912	169	...	...	13	4	24	5	11	15	1,441	951	222	100
1934	2,623,817	141	19	2,166	19	6,167	193	...	...	94	13	29	7	6	15	1,509	955	238	63
1935	2,645,575	173	20	2,250	18	4,913	194	...	...	181	20	29	5	7	16	1,571	939	266	72
1936	2,681,736	132	19	3,939	26	7,064	220	...	...	25	6	11	4	7	5	1,372	955	326	82

* Notifiable from 1st January, 1898.
† „ 23rd January, 1900.
‡ „ 1st February, 1912. Proclamation re-issued 14th August, 1931.
§ „ 1st April, 1926.
‖ „ 11th October, 1915.
¶ „ 1904, city of Sydney only; from 1915, Metropolitan and Hunter River Districts; from 1916, Blue Mountain Districts. Notification extended to whole State, March, 1929.
** „ 16th August, 1929.

GRAPHS. (61–66).

Typhoid Fever
Scarlet Fever
Diphtheria ... } Annual Death-rate per 100,000 (1875–1936) and case rate per 10,000 of population (1898–1936).

Whooping Cough.—Annual Death-rate per 100,000 of population in New South Wales, 1875-1936.

Years 1931, 1932, 1933.—Tables are appended (p. 57 and 60) giving the Age, Sex and Seasonal Incidence for the years 1931, 1932, and 1933 of Notified Cases of Infectious Disease.

TABLE IV.—Table showing Age and Sex Incidence, and Mortality in the Metropolitan Combined District, Hunter River Combined District, Broken Hill District, and Remainder of State, from the notified cases of Cerebro-spinal Fever (Meningococcal Meningitis) Diphtheria and Membranous Croup, Infantile Paralysis (Acute Anterior Poliomyelitis), Encephalitis Lethargica, Scarlet Fever, Typhoid Fever (including Paratyphoid) and Pulmonary Tuberculosis, Puerperal Infection, *for the year ended* 31*st December*, 1931.

Age Period.	Typhoid and Paratyphoid.						Scarlet Fever.						Diphtheria.					
	Incidence.			Mortality.			Incidence.			Mortality.			Incidence.			Mortality.		
	Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.		
	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.
METROPOLITAN COMBINED DISTRICT.																		
All ages	49	37	86	...	...	10	1,137	1,971	3,108	12	12	24	887	951	1,838	...	...	70
Under 1 year	2	1	3	...	...	...	7	15	22	...	2	2	27	15	42	...	...	...
1– 4	3	2	5	...	...	...	354	417	771	5	3	8	391	328	719	...	...	...
5–14	6	10	16	...	...	...	543	852	1,395	5	1	6	399	467	866	...	...	...
15–24	11	12	23	...	...	...	96	317	413	1	2	3	35	58	93	...	...	...
25–34	15	7	22	...	...	...	81	255	336	...	3	3	16	46	62	...	...	...
35–44	7	4	11	...	...	...	41	78	119	1	1	2	6	22	28	...	...	...
45–54	1	...	1	...	...	...	10	22	32	...	...	...	2	3	5	...	...	...
55–64	4	1	5	...	...	...	4	10	14	...	...	...	...	5	5	...	...	...
65 and over	...	...	...	...	...	...	...	3	3	...	...	...	2	2	4	...	...	...
Not stated	...	...	...	...	...	...	1	2	3	...	...	...	9	5	14	...	...	...
HUNTER RIVER COMBINED DISTRICT.																		
All ages	13	14	27	1	1	2	87	157	244	...	2	2	164	225	389	5	11	16
Under 1 year	...	...	...	...	...	...	1	...	1	...	...	...	7	1	8	2	...	2
1– 4	...	...	...	...	...	...	35	18	53	...	2	2	78	72	150	3	11	14
5–14	2	3	5	...	...	...	35	79	114	...	...	...	63	98	161	...	...	...
15–24	6	3	9	...	1	1	5	35	40	...	...	...	12	27	39	...	...	...
25–34	2	...	2	...	...	...	6	18	24	...	...	...	2	16	18	...	...	...
35–44	3	3	6	1	...	1	3	4	7	...	...	...	...	8	8	...	...	...
45–54	...	2	2	...	...	...	1	1	2	...	...	...	...	2	2	...	...	...
55–64	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
65 and over	...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Not stated	...	...	...	...	...	...	1	2	3	...	...	...	2	1	3	...	...	...
BROKEN HILL DISTRICT.																		
All ages	48	61	109	...	...	4	12	26	38	...	...	...	...	...	...	...	...	...
Under 1 year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1– 4	1	1	2	...	...	...	5	3	8	...	...	...	...	...	...	...	...	...
5–14	8	7	15	...	...	...	7	19	26	...	...	...	...	...	...	...	...	...
15–24	6	11	17	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...
25–34	10	12	22	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...
35–44	6	14	20	...	...	...	...	2	2	...	...	...	...	...	...	...	...	...
45–54	14	11	25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
55–64	2	5	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
65 and over	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Not stated	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
REMAINDER OF STATE.																		
All ages	71	47	118	...	...	19	410	677	1,087	6	4	10	950	1,255	2,205	...	...	82
Under 1 year	...	...	...	...	...	...	6	6	12	...	...	...	17	25	42	...	...	...
1– 4	5	3	8	...	...	...	135	123	258	2	1	3	389	345	734	...	...	...
5–14	18	16	34	...	...	...	191	348	539	1	...	1	427	606	1,033	...	...	...
15–24	16	17	33	...	...	...	34	92	126	...	1	1	65	137	202	...	...	...
25–34	12	4	16	...	...	...	26	69	95	2	1	3	29	82	111	...	...	...
35–44	5	2	7	...	...	...	12	27	39	1	...	1	11	33	44	...	...	...
45–54	7	3	10	...	...	...	2	6	8	...	1	1	1	17	18	...	...	...
55–64	5	2	7	...	...	...	...	...	...	...	...	...	2	6	8	...	...	...
65 and over	3	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Not stated	...	...	...	...	...	...	4	6	10	...	...	...	9	4	13	...	...	...

Age Period.	Encephalitis Lethargica.						Infantile Paralysis.						Cerebro-spinal Meningitis.						Pulmonary Tuberculosis.						Puerperal Infection.					
	Incidence.			Mortality.			Incidence.			Mortality.			Incidence.			Mortality.			Incidence.			Mortality.			Incidence.			Mortality.		
	Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.		
	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.
METROPOLITAN COMBINED DISTRICT.																														
All ages	8	7	15	5	6	11	43	30	73	...	...	6	13	4	17	...	...	6	...	...	1,151	...	...	671	...	220	220	...	40	40
Under 1 year	...	...	...	...	...	...	2	2	4	...	...	...	5	1	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1– 4	...	1	1	...	...	...	14	6	20	...	...	...	2	1	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5–14	1	...	1	...	...	...	...	3	3	...	...	...	3	1	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15–24	3	1	4	1	...	1	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	66	66	...	...	...
25–34	1	...	1	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	114	114	...	...	...
35–44	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	36	36	...	...	...
45–54	1	1	2	...	...	...	1	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...
55–64	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
65 and over	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Not stated	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	3	...	...	...
HUNTER RIVER COMBINED DISTRICT.																														
All ages	3	2	5	3	3	6	2	1	3	...	...	...	3	1	4	1	1	2	...	...	79	30	31	61	...	26	26	...	8	8
Under 1 year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...
1– 4	1	...	1	...	...	...	2	...	2	...	...	...	1	...	1	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...
5–14	1	...	1	...	...	...	2	...	2	...	...	...	...	1	1	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...
15–24	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	3	6	9	...	10	10	...	2	2
25–34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	7	11	...	13	13	...	4	4
35–44	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	12	10	22	...	3	3	...	2	2
45–54	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	5	6	...	...	...	...	...	...
55–64	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	2	6	...	...	...	...	...	...
65 and over	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	1	5	...	...	...	...	...	...
Not stated	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
BROKEN HILL DISTRICT.																														
All ages	Included in Remainder of State.																													
REMAINDER OF STATE.																														
All ages	12	17	29	...	...	4	7	2	9	...	1	1	...	...	358	...	...	282	...	73	73	...	35	35						
Under 1 year	...	3	3	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...						
1– 4	1	5	11	...	...	...	3	2	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...						
5–14	1	5	2	...	...	...	3	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...						
15–24	...	2	1	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	28	28	...	...	...						
25–34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	31	31	...	...	...						
35–44	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9	9	...	...	...						
45–54	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...						
55–64	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...						
65 and over	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...						
Not stated	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	4	...	...	...						

TABLE IV.—Table showing Age and Sex Incidence, and Mortality, in the Metropolitan Combined District, Hunter River Combined District, Broken Hill District, and Remainder of State, from the notified cases of Cerebro-spinal Fever (Meningococcal Meningitis), Diphtheria and Membranous Croup, Infantile Paralysis, (Acute Anterior Poliomyelitis), Encephalitis Lethargica, Scarlet Fever, Typhoid Fever (including Paratyphoid) and Pulmonary Tuberculosis, Puerperal Infection, for the year ended 31st December, 1932.

Age Period.	Typhoid and Paratyphoid.						Scarlet Fever.						Diphtheria.					
	Incidence.			Mortality.			Incidence.			Mortality.			Incidence.			Mortality.		
	Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.		
	M.	F.	Total	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.
METROPOLITAN COMBINED DISTRICT.																		
All ages	64	38	102	...	...	9	1127	1,904	3,031	8	18	26	916	1,133	2,049	...	...	...
Under 1 year	...	...	...	...	...	...	5	13	18	...	1	1	9	10	19	...	...	74
1- 4	6	1	7	...	...	...	353	392	745	6	7	13	424	408	832	...	...	...
5-14	23	9	32	...	...	...	562	866	1,428	1	6	7	409	521	930	...	...	...
15-24	12	15	27	...	...	...	66	268	334	...	2	2	40	86	126	...	...	...
25-34	7	6	13	...	...	...	93	249	348	1	1	2	23	64	87	...	...	...
35-44	7	2	9	...	...	...	26	78	104	...	1	1	8	20	28	...	...	...
45-54	5	4	9	...	...	...	10	27	37	...	...	...	1	15	16	...	...	...
55-64	3	1	4	...	...	...	2	8	10	...	...	...	...	3	3	...	...	...
65 and over	1	...	1	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...
Not stated	...	...	...	...	...	...	4	2	6	...	...	...	2	6	8	...	...	...
HUNTER RIVER COMBINED DISTRICT.																		
All ages	15	7	22	...	...	5	174	343	517	4	5	9	221	265	486	8	8	16
Under 1 year	...	...	...	...	...	...	...	...	...	...	...	...	2	4	6	1	1	2
1- 4	...	...	...	...	...	...	65	65	130	2	1	3	120	92	212	6	6	12
5-14	4	2	6	...	...	...	68	174	242	2	3	5	73	112	185	...	1	1
15-24	3	2	5	...	...	...	15	43	58	...	1	1	10	32	42	1	...	1
25-34	2	...	2	...	...	...	21	43	64	...	...	...	8	10	18	...	...	...
35-44	3	1	4	...	...	...	1	10	11	...	...	...	6	6	12	...	...	...
45-54	1	1	2	...	...	...	2	4	6	...	...	...	1	5	6	...	...	...
55-64	1	1	2	...	...	...	...	2	2	...	...	...	...	1	1	...	...	...
65 and over	1	...	1	...	...	...	1	...	1	...	...	...	...	1	1	...	...	...
Not stated	...	...	...	...	...	...	1	2	3	...	...	...	1	2	3	...	...	...
***BROKEN HILL DISTRICT.**																		
All ages	15	5	20	...	...	1	7	8	15	...	...	...	...	...	...	...	...	...
Under 1 year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1- 4	2	...	2	...	...	...	2	4	6	...	...	...	...	...	...	...	...	...
5-14	6	3	9	...	...	...	5	2	7	...	...	...	...	...	...	...	...	...
15-24	3	1	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25-34	2	...	2	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...
35-44	1	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
45-54	1	...	1	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...
55-64	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
65 and over	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Not stated	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
REMAINDER OF STATE																		
All ages	56	33	89	...	...	16	461	881	1,342	4	18	22	776	999	1,775	...	...	70
Under 1 year	...	...	...	...	...	...	4	...	4	1	...	1	23	13	36	...	...	...
1- 4	21	3	5	...	...	...	142	182	324	1	10	11	314	312	626	...	...	...
5-14	16	9	25	...	...	...	222	424	646	1	4	5	319	389	708	...	...	...
15-24	15	5	20	...	...	...	41	130	171	1	3	4	57	142	199	...	...	...
25-34	8	7	15	...	...	...	30	96	126	...	...	...	31	68	99	...	...	...
35-44	4	6	10	...	...	...	18	26	44	...	1	1	14	48	62	...	...	...
45-54	9	...	9	...	...	...	1	16	17	...	...	...	5	11	16	...	...	...
55-64	...	1	1	...	...	...	...	2	2	...	...	...	...	4	4	...	...	...
65 and over	...	1	1	...	...	...	...	...	...	...	...	...	1	2	3	...	...	...
Not stated	2	1	3	...	...	...	3	5	8	...	...	...	12	10	22	...	...	...

Age Period.	Encephalitis Lethargica.						Infantile Paralysis.						Cerebro-spinal Meningitis.					
	Incidence.			Mortality.			Incidence.			Mortality.			Incidence.			Mortality.		
	Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.		
	M.	F.	Total	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.
METROPOLITAN COMBINED DISTRICT.																		
All ages	4	5	9	...	...	9	92	48	140	...	...	13	10	23	73	1	4	5
Under 1 year	...	...	...	...	...	...	...	3	3	...	...	...	...	1	1	1	...	1
1- 4	...	...	...	...	...	...	42	20	62	...	...	...	7	8	15	...	3	3
5-14	...	...	...	...	...	...	39	15	54	...	...	...	3	2	5	...	...	...
15-24	...	1	1	...	...	...	8	7	15	...	...	...	...	1	1	...	...	...
25-34	2	...	2	...	...	...	2	3	5	...	...	...	...	1	1	...	...	...
35-44	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
45-54	2	2	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
55-64	...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
65 and over	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Not stated	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...
HUNTER RIVER COMBINED DISTRICT.																		
All ages	1	...	1	...	...	2	2	37	22	59	...	...	10	1	3	4	...	...
Under 1 year	...	...	...	...	...	...	...	3	2	5	...	...	...	...	...	...	...	...
1- 4	...	...	...	...	...	...	...	10	9	19	...	...	...	...	...	...	...	...
5-14	...	...	...	...	...	...	...	22	7	29	...	...	...	1	1	2	...	...
15-24	1	...	1	...	...	...	1	2	3	5	...	...	...	...	2	2	...	...
25-34	...	...	...	...	...	...	...	2	3	5	...	...	...	...	...	...	...	...
35-44	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...
45-54	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
55-64	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
65 and over	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Not stated	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
***BROKEN HILL DISTRICT.**																		
All ages	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Under 1 year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1- 4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5-14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15-24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25-34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35-44	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
45-54	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
55-64	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
65 and over	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Not stated	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
REMAINDER OF STATE																		
All ages	3	3	6	...	...	7	108	77	185	...	...	28	10	6	16	2	...	2
Under 1 year	...	...	...	...	...	...	2	...	2	...	...	...	1	3	4	...	...	...
1- 4	...	...	...	...	...	...	32	39	71	...	...	...	4	2	6	1	...	1
5-14	...	...	...	...	...	...	51	31	82	...	...	...	5	...	5	1	...	1
15-24	...	...	...	...	...	...	17	6	23	...	...	...	...	1	1	...	...	...
25-34	1	2	3	...	...	...	3	1	4	...	...	...	...	...	...	...	...	...
35-44	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...
45-54	1	...	1	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...
55-64	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
65 and over	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Not stated	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...

Age Period.	Pulmonary Tuberculosis.						Puerperal Infection.					
	Incidence.			Mortality.			Incidence.			Mortality.		
	Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.		
	M.	F.	Total	M.	F.	Total.	M.	F.	Total	M.	F.	Total.
METROPOLITAN COMBINED DISTRICT.												
All ages	...	...	1,083	...	...	645	...	236	236	...	33	33
Under 1 year	...	...	...	...	...	...	...	...	...	...	...	...
1- 4	...	...	...	...	...	...	...	...	...	...	...	...
5-14	...	...	...	...	...	...	...	...	...	...	...	...
15-24	...	...	...	...	...	...	...	108	108	...	...	...
25-34	...	...	...	...	...	...	...	77	77	...	...	...
35-44	...	...	...	...	...	...	...	44	44	...	...	...
45-54	...	...	...	...	...	...	...	1	1	...	...	...
55-64	...	...	...	...	...	...	...	...	...	...	...	...
65 and over	...	...	...	...	...	...	...	...	...	...	...	...
Not stated	...	...	...	...	...	...	...	6	6	...	...	...
HUNTER RIVER COMBINED DISTRICT.												
All ages	84	32	26	58	...	9	9	...	7	7		
Under 1 year	...	...	...	...	...	...	...	...	...	...	...	...
1- 4	...	...	...	...	...	...	...	...	...	...	...	...
5-14	...	...	...	...	...	...	...	...	...	...	...	...
15-24	...	...	...	...	...	...	...	...	...	...	...	...
25-34	5	2	7	...	5	5	...	2	2			
35-44	6	6	12	...	4	4	...	2	2			
45-54	9	9	18	...	2	2	...	3	3			
55-64	5	6	11	...	...	...	...	...	...			
65 and over	3	2	5	...	...	...	...	...	...			
Not stated	4	1	5	...	...	...	...	...	...			
***BROKEN HILL DISTRICT.**												
All ages	...	...	...	...	...	...	...	...	...	...	...	...
Under 1 year	...	...	...	...	...	...	...	...	...	...	...	...
1- 4	...	...	...	...	...	...	...	...	...	...	...	...
5-14	...	...	...	...	...	...	...	...	...	...	...	...
15-24	...	...	...	...	...	...	...	...	...	...	...	...
25-34	...	...	...	...	...	...	...	...	...	...	...	...
35-44	...	...	...	...	...	...	...	...	...	...	...	...
45-54	...	...	...	...	...	...	...	...	...	...	...	...
55-64	...	...	...	...	...	...	...	...	...	...	...	...
65 and over	...	...	...	...	...	...	...	...	...	...	...	...
Not stated	...	...	...	...	...	...	...	...	...	...	...	...
REMAINDER OF STATE												
All ages	318	...	...	266	...	47	47	...	...	19		
Under 1 year	...	...	...	...	...	...	...	...	...	...	...	...
1- 4	...	...	...	...	...	...	...	...	...	...	...	...
5-14	...	...	...	...	...	...	...	...	...	...	...	...
15-24	...	...	...	...	...	...	19	19	...	...	...	...
25-34	...	...	...	...	...	...	12	12	...	...	...	...
35-44	...	...	...	...	...	...	13	13	...	...	...	...
45-54	...	...	...	...	...	...	2	2	...	...	...	...
55-64	...	...	...	...	...	...	...	...	...	...	...	...
65 and over	...	...	...	...	...	...	...	...	...	...	...	...
Not stated	...	...	...	...	...	...	1	1	...	...	...	...

* Broken Hill figures, except Typhoid and Scarlet Fever, are included in Remainder of State.

TABLE IV.—Table showing Age and Sex Incidence, and Mortality, in the Metropolitan Combined District, Hunter River Combined District, Broken Hill District, and Remainder of State, from the notified cases of Cerebro-spinal Fever (Meningococcal Meningitis), Diphtheria and Membranous Croup, Infantile Paralysis (Acute Anterior Poliomyelitis), Encephalitis Lethargica, Scarlet Fever, Typhoid Fever (including Paratyphoid), and Pulmonary Tuberculosis, Puerperal Infection, *for the year ended 31st December*, 1933.

Age Period.	Typhoid and Paratyphoid.						Scarlet Fever.						Diphtheria.					
	Incidence.			Mortality.			Incidence.			Mortality.			Incidence.			Mortality.		
	Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.		
	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.
METROPOLITAN COMBINED DISTRICT.																		
All ages	33	18	51	...	...	5	1,014	1,676	2,690	16	21	37	931	1,136	2,067	...	...	78
Under 1 year	...	...	...	...	...	...	9	6	15	1	1	2	19	12	31	...	...	...
1– 4	1	1	2	...	...	...	340	377	717	7	6	13	360	354	714	...	...	...
5–14	11	8	19	...	...	...	480	799	1,279	4	6	10	462	515	977	...	...	...
15–24	10	3	13	...	...	...	62	227	289	...	2	2	35	119	154	...	...	...
25–34	5	2	7	...	...	...	84	184	268	2	3	5	34	80	114	...	...	...
35–44	3	1	4	...	...	...	31	56	87	2	...	2	11	36	47	...	...	...
45–54	1	2	2	...	...	...	5	15	20	...	3	3	7	7	14	...	...	...
55–64	1	...	3	...	...	...	1	6	7	...	...	...	...	1	1	...	...	...
65 and over	1	...	1	...	...	...	...	1	1	...	...	...	1	2	3	...	...	...
Not stated	...	...	...	...	...	...	2	5	7	...	...	...	2	10	12	...	...	...
HUNTER RIVER COMBINED DISTRICT.																		
All ages	18	11	29	5	2	7	197	407	604	4	5	9	175	222	397	7	8	15
Under 1 year	...	...	...	1	...	1	1	2	3	...	...	...	1	1	2	...	...	...
1– 4	1	1	2	...	...	...	76	87	163	3	2	5	86	68	154	6	5	11
5–14	3	2	5	...	...	...	97	203	300	1	2	3	76	97	167	...	2	2
15–24	4	4	8	...	...	...	13	47	60	...	...	...	5	23	28	...	...	...
25–34	...	2	2	...	...	...	6	48	54	...	...	...	6	18	24	...	1	1
35–44	3	1	4	1	...	1	4	8	12	...	...	...	4	10	14	...	...	...
45–54	3	...	3	1	...	1	...	3	3	...	1	1	1	2	3	...	...	...
55–64	2	1	3	2	2	4	...	...	...	...	...	...	...	...	...	...	...	...
65 and over	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1
Not stated	2	...	2	...	...	...	1	8	9	...	...	...	2	3	5	...	...	...
BROKEN HILL DISTRICT. (These figures are included in Remainder of State.)																		
REMAINDER OF STATE.																		
All ages	63	45	108	...	...	16	350	615	965	2	7	9	559	789	1,348	...	...	76
Under 1 year	...	...	...	...	...	...	1	4	5	...	...	...	15	16	31	...	...	...
1– 4	3	2	5	...	...	...	123	160	283	1	4	5	218	208	426	...	...	...
5–14	12	13	25	...	...	...	157	268	425	1	2	3	309	343	652	...	...	...
15–24	17	14	31	...	...	...	20	74	94	...	1	1	49	103	152	...	...	...
25–34	16	6	22	...	...	...	26	75	101	...	...	...	30	64	94	...	...	...
35–44	9	4	13	...	...	...	14	18	32	...	...	...	19	33	52	...	...	...
45–54	2	3	5	...	...	...	2	7	9	...	...	...	4	8	12	...	...	...
55–64	2	...	2	...	...	...	1	1	2	...	...	...	3	7	10	...	...	...
65 and over	2	1	3	...	...	...	...	2	2	...	...	...	...	...	...	...	...	...
Not stated	...	2	2	...	...	...	6	6	12	...	...	...	12	7	19	...	...	...

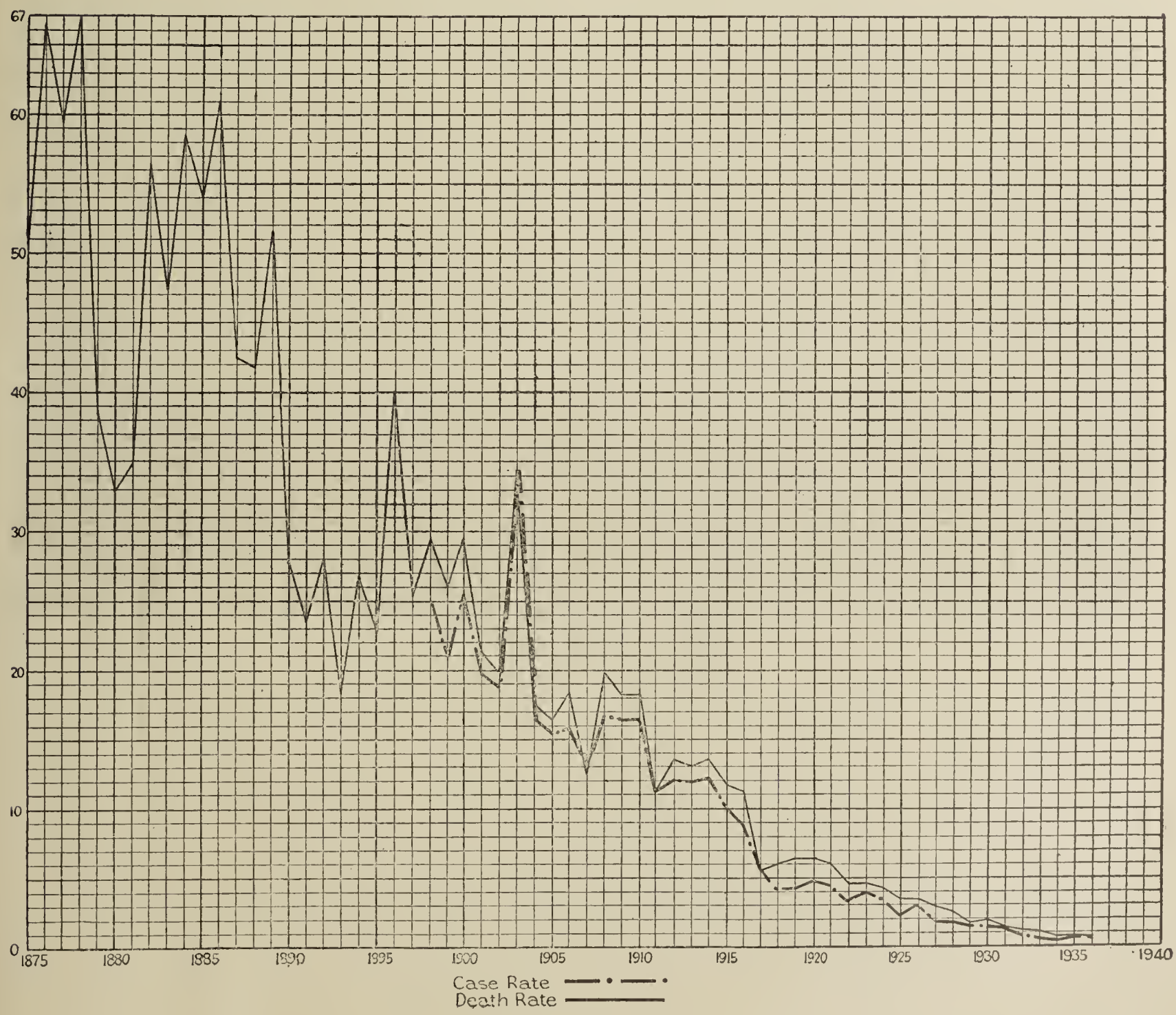
Age Period.	Encephalitis Lethargica.						Infantile Paralysis.						Cerebro-spinal Meningitis.						Pulmonary Tuberculosis.						Puerperal Infection.					
	Incidence.			Mortality			Incidence.			Mortality.			Incidence.			Mortality.			Incidence.			Mortality.			Incidence.			Mortality.		
	Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.		
	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total	M.	F.	Total.
METROPOLITAN COMBINED DISTRICT.																														
All ages	2	5	7	...	...	9	5	3	8	...	...	1	8	8	16	...	...	4	...	...	1,100	...	...	616	...	159	159	...	...	35
Under 1 year	...	...	...	...	...	...	...	...	...	...	...	...	3	2	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1– 4	...	1	1	...	...	...	2	1	3	...	...	...	3	3	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5–14	...	1	1	...	...	...	2	2	4	...	...	...	1	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15–24	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	49	49	...	...	...
25–34	...	1	1	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	77	77	...	...	...
35–44	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	28	28	...	...	...
45–54	...	1	1	...	...	...	1	...	1	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
55–64	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
65 and over	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Not stated	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	5	...	...	...
HUNTER RIVER COMBINED DISTRICT.																														
All ages	1	1	2	...	...	1	...	...	...	...	...	...	1	...	1	...	...	...	...	...	72	30	17	47	...	10	10	...	7	7
Under 1 year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1– 4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5–14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15–24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	3	4	...	4	4	...	3	3	
25–34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	3	7	...	3	3	...	3	3	
35–44	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9	5	14	...	2	2	...	1	1	
45–54	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6	4	10	...	...	...	...	...	...	...
55–64	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	1	9	...	...	...	...	...	...	...
65 and over	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1	3	...	...	...	...	...	...	...
Not stated	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...
BROKEN HILL DISTRICT. (These figures are included in Remainder of State.)																														
REMAINDER OF STATE.																														
All ages	1	3	4	...	...	5	4	1	5	...	...	2	3	5	8	...	...	1	...	...	269	...	...	288	...	53	53	...	...	24
Under 1 year	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1– 4	...	...	...	...	...	...	1	...	1	...	...	...	2	3	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5–14	...	1	1	...	...	...	2	1	3	...	...	...	1	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15–24	...	...	...	...	...	...	1	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	19	19	...	...	...
25–34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	22	22	...	...	...
35–44	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	8	...	...	...
45–54	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...
55–64	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
65 and over	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Not stated	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	3	...	...	...

TABLE V.—Showing the seasonal prevalence of Typhoid Fever (including Paratyphoid), Scarlet Fever, Diphtheria, and Membranous Croup in New South Wales for the years ended 31st December, 1931, 1932 and 1933.

Month—	1931. Metropolitan Combined Districts. C.	1931. Metropolitan Combined Districts. D.	1931. Hunter River Combined Districts. C.	1931. Hunter River Combined Districts. D.	1931. Broken Hill District. C.	1931. Broken Hill District. D.	1931. Remainder of State. C.	1931. Remainder of State. D.	1931. Total. C.	1931. Total. D.	1932. Metropolitan Combined Districts. C.	1932. Metropolitan Combined Districts. D.	1932. Hunter River Combined Districts. C.	1932. Hunter River Combined Districts. D.	1932. Broken Hill District. C.	1932. Broken Hill District. D.	1932. Remainder of State. C.	1932. Remainder of State. D.	1932. Total. C.	1932. Total. D.	1933. Metropolitan Combined Districts. C.	1933. Metropolitan Combined Districts. D.	1933. Hunter River Combined Districts. C.	1933. Hunter River Combined Districts. D.	1933. Broken Hill District. C.	1933. Broken Hill District. D.	1933. Remainder of State. C.	1933. Remainder of State. D.	1933. Total. C.	1933. Total. D.	Month.
Typhoid and Paratyphoid Fever.																														
January	8	...	5	...	3	...	23	...	39	7	24	...	3	...	4	...	11	...	42	8	3	...	3	...	...	...	6	...	12	3	Januray.
February	6	...	2	...	3	...	14	...	25	1	13	...	3	...	1	...	26	...	43	3	4	...	9	...	1	...	6	...	20	1	February.
Mareh	10	...	8	1	4	...	13	...	35	5	16	...	4	...	...	...	8	...	28	4	5	...	7	...	...	...	43	...	55	10	March.
April	8	...	1	...	4	...	16	...	29	1	6	...	4	...	1	...	9	...	20	2	4	...	2	...	1	...	10	...	17	7	April.
May	5	...	1	...	3	...	13	...	22	2	8	...	1	...	4	...	5	...	18	2	8	...	1	...	1	...	8	...	18	1	May.
June	8	...	...	...	2	...	...	...	10	1	6	...	...	...	1	...	1	...	8	4	6	...	...	...	...	...	3	...	9	...	June.
July	5	...	2	...	2	...	1	...	10	4	4	...	...	...	...	...	...	...	4	...	4	...	...	...	...	...	5	...	11	...	July.
August	...	...	1	...	...	...	3	...	4	1	4	...	...	...	...	...	4	...	8	1	2	...	...	...	...	...	1	...	3	...	August.
September	5	...	...	...	7	...	8	...	20	2	3	...	...	...	1	...	5	...	9	1	3	...	...	...	...	...	...	...	3	...	September.
October	7	...	...	...	31	...	1	...	39	3	8	...	1	...	2	...	5	...	16	3	2	...	2	...	...	...	3	...	7	1	October.
November	8	...	2	...	42	...	17	...	69	2	7	...	1	...	3	...	7	...	18	1	6	...	1	...	1	...	10	...	18	2	November.
December	16	...	5	1	8	...	9	...	38	6	3	...	5	...	3	...	8	...	19	2	4	...	4	...	2	...	5	...	15	1	Deeember.
Total	86	10	27	2	109	4	118	19	340	35	102	9	22	5	20	1	89	16	233	31	51	5	29	7	8	2	100	14	188	28	Total.
Scarlet Fever.																														
January	242	4	20	...	1	...	98	1	359	5	220	1	28	...	2	...	110	...	360	2	309	...	48	...	1	...	91	...	449	11	January.
February	240	2	16	...	...	...	108	2	364	4	181	...	30	...	4	...	119	...	334	1	190	...	41	...	1	...	80	...	312	4	February.
March	282	1	18	...	1	...	98	1	399	2	208	2	48	...	...	...	139	...	395	9	217	...	29	...	2	...	102	...	350	3	March.
April	235	2	13	...	6	...	128	2	382	4	209	2	57	...	1	...	131	...	398	3	162	...	22	...	...	...	82	...	266	4	April.
May	268	1	21	...	5	...	104	...	398	1	226	2	54	...	...	...	134	...	414	5	225	...	38	...	3	...	103	...	369	1	May.
June	294	1	17	...	6	...	84	...	401	1	220	1	28	...	2	...	116	...	366	1	192	...	20	...	1	...	86	...	299	4	June.
July	245	4	32	...	7	...	70	1	354	5	248	4	39	...	1	...	101	...	389	7	227	...	38	...	8	...	119	...	391	3	July.
August	221	2	32	...	4	...	54	2	311	4	328	2	57	...	1	...	101	...	487	2	255	...	41	...	4	...	72	...	372	6	August.
September	269	1	15	1	1	...	44	...	329	2	269	2	25	...	3	...	97	...	394	9	259	...	66	...	2	...	58	...	385	8	September.
October	269	4	16	...	4	...	86	...	375	4	250	4	34	...	1	...	78	...	363	5	237	...	80	...	5	...	64	...	385	3	October.
November	259	1	8	1	2	...	107	1	376	3	315	1	52	...	...	...	100	...	467	5	241	...	92	...	3	...	49	...	387	4	November.
December	284	1	36	...	1	...	108	...	429	1	357	5	65	...	...	...	116	...	538	8	176	...	89	...	1	...	28	...	294	4	Deeember.
Total	3,108	24	244	2	38	...	1,087	10	4,477	36	3,031	26	517	9	15	...	1,342	2	4,905	57	2,696	37	604	9	31	...	934	9	4,259	55	Total.
Diphtheria.																														
January	175	...	56	...	2	...	260	...	493	14	157	...	42	...	1	...	178	...	378	14	159	...	23	...	7	...	168	...	357	21	January.
February	114	...	32	...	3	...	189	...	338	11	153	...	35	...	3	...	168	...	359	16	176	...	45	...	8	...	142	...	371	20	February.
March	176	...	58	...	1	...	245	...	480	13	184	...	69	...	1	...	207	...	461	14	233	...	35	...	1	1	150	...	419	10	Mareh.
April	168	...	56	...	1	...	241	...	466	14	255	...	51	...	4	...	224	...	534	18	224	...	63	...	...	...	130	...	417	17	April.
May	283	...	40	...	7	...	258	...	588	21	315	...	80	...	1	...	238	...	634	20	188	...	54	...	3	...	181	...	426	16	May.
June	202	...	22	...	10	...	173	...	407	23	188	...	32	...	3	...	138	...	361	19	152	...	33	...	5	...	126	...	316	17	June.
July	168	...	28	...	6	...	142	...	344	17	166	...	33	...	3	...	115	...	317	21	158	...	26	...	1	...	106	...	291	19	July.
August	141	...	21	...	4	...	118	...	284	14	163	...	41	...	2	...	135	...	341	12	157	...	15	...	...	...	98	...	270	14	August.
September	112	...	8	...	4	...	94	...	218	7	114	...	31	...	...	...	88	...	233	6	100	...	28	...	1	...	61	...	190	12	September.
October	69	...	13	...	4	...	88	...	174	10	120	...	27	...	4	...	77	...	228	5	176	...	22	...	...	...	81	...	279	11	October.
November	80	...	22	...	4	...	140	...	246	7	101	...	24	...	5	...	83	...	213	8	178	...	25	...	1	...	56	...	260	5	November.
December	150	...	33	...	6	...	205	...	394	17	133	...	21	...	5	...	95	...	254	7	166	...	28	...	...	...	122	...	316	7	December.
Total	1,838	70	389	16	52	1	2,153	81	4,432	168	2,049	74	486	16	32	2	1,746	68	4,313	160	2,067	78	397	15	27	2	1,421	74	3,912	169	Total.

TYPHOID FEVER.

Annual Death Rate per 100,000 and Annual Case Rate per 10,000 of population in New South Wales, 1875-1936.

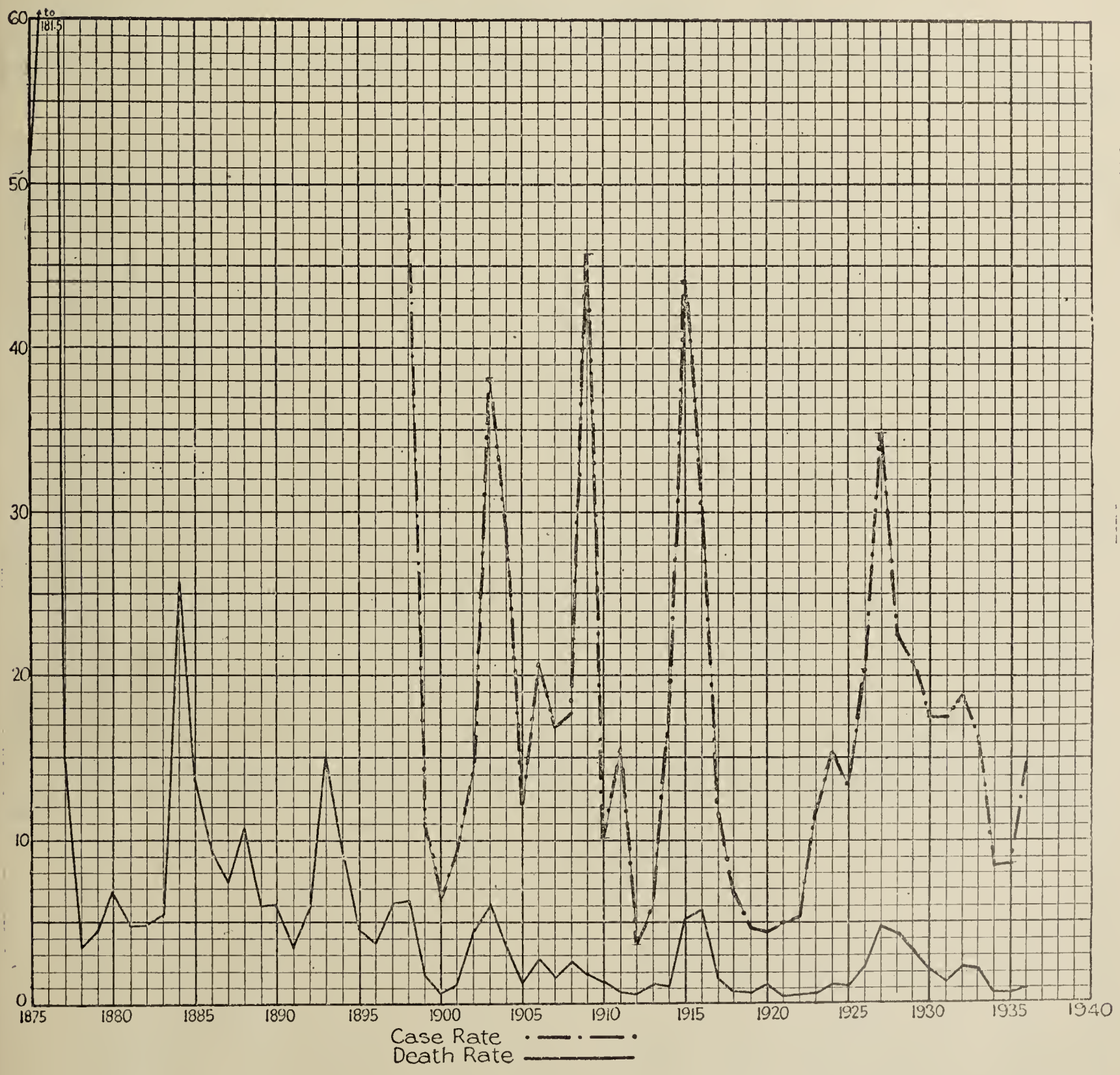


DIPHTHERIA.

Annual Death Rate per 100,000 and Annual Case Rate per 10,000 of population in New South Wales, 1875-1936.

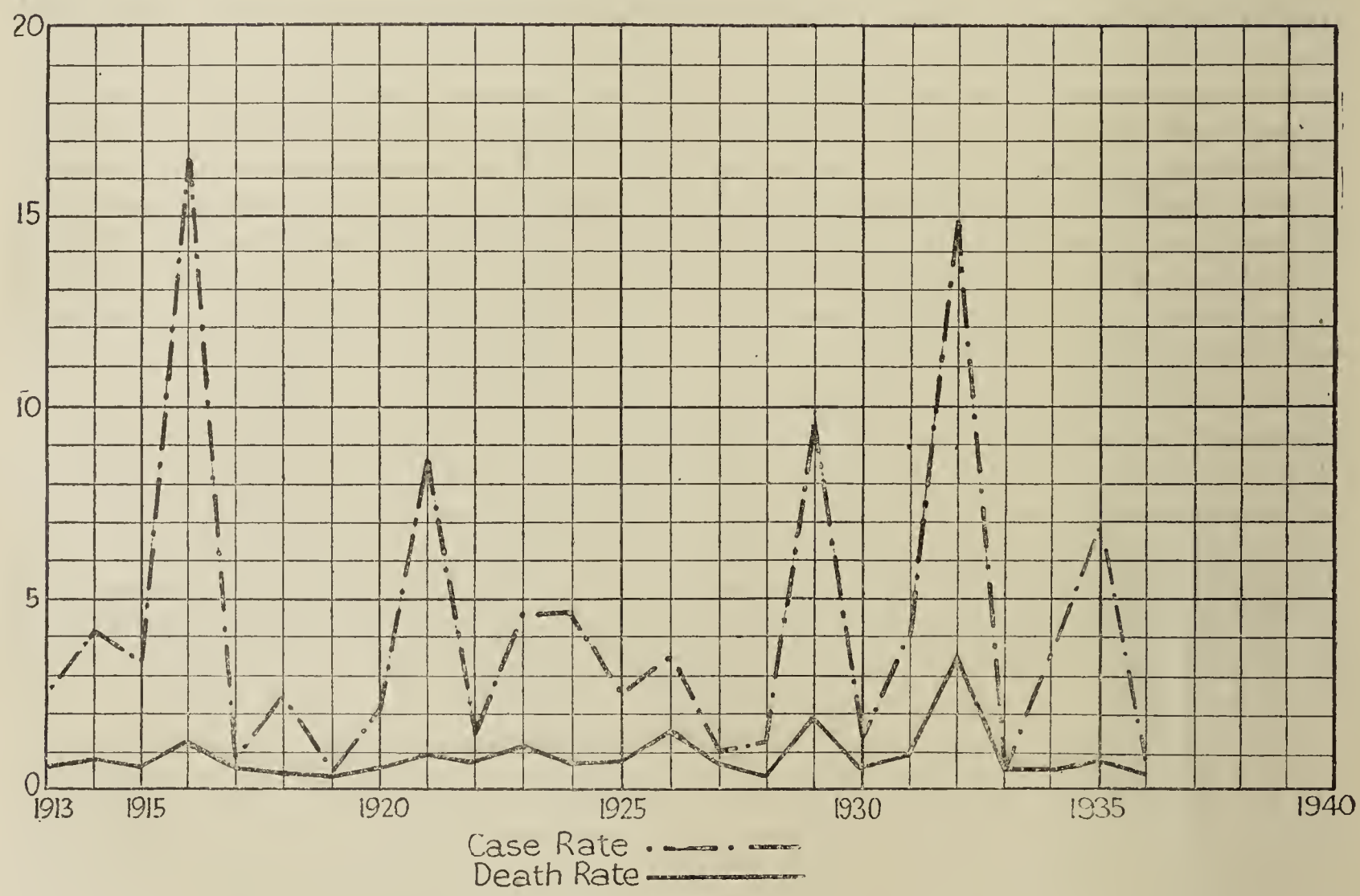
SCARLET FEVER.

Annual Death Rate per 100,000 of the population, 1875-1936, and Annual Case Rate per 10,000 of the population in New South Wales, 1898-1936.



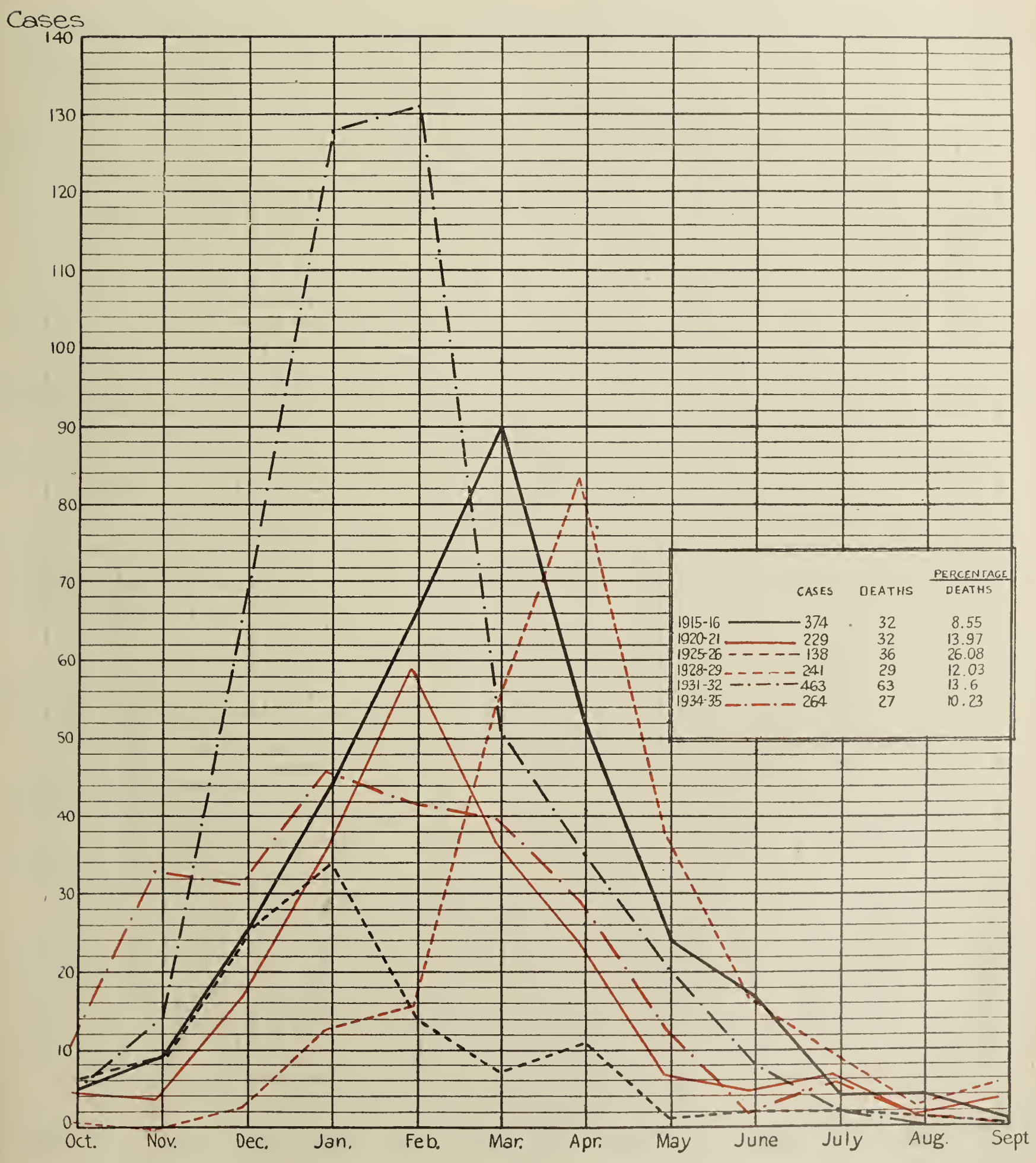
INFANTILE PARALYSIS.

Annual Death Rate and Case Rate per 100,000 of the population in New South Wales, 1913-1936.



INFANTILE PARALYSIS,

Graph illustrating Epidemics 1914-15; 1920-21; 1924-25; 1928-29; 1931-32; 1934-35.



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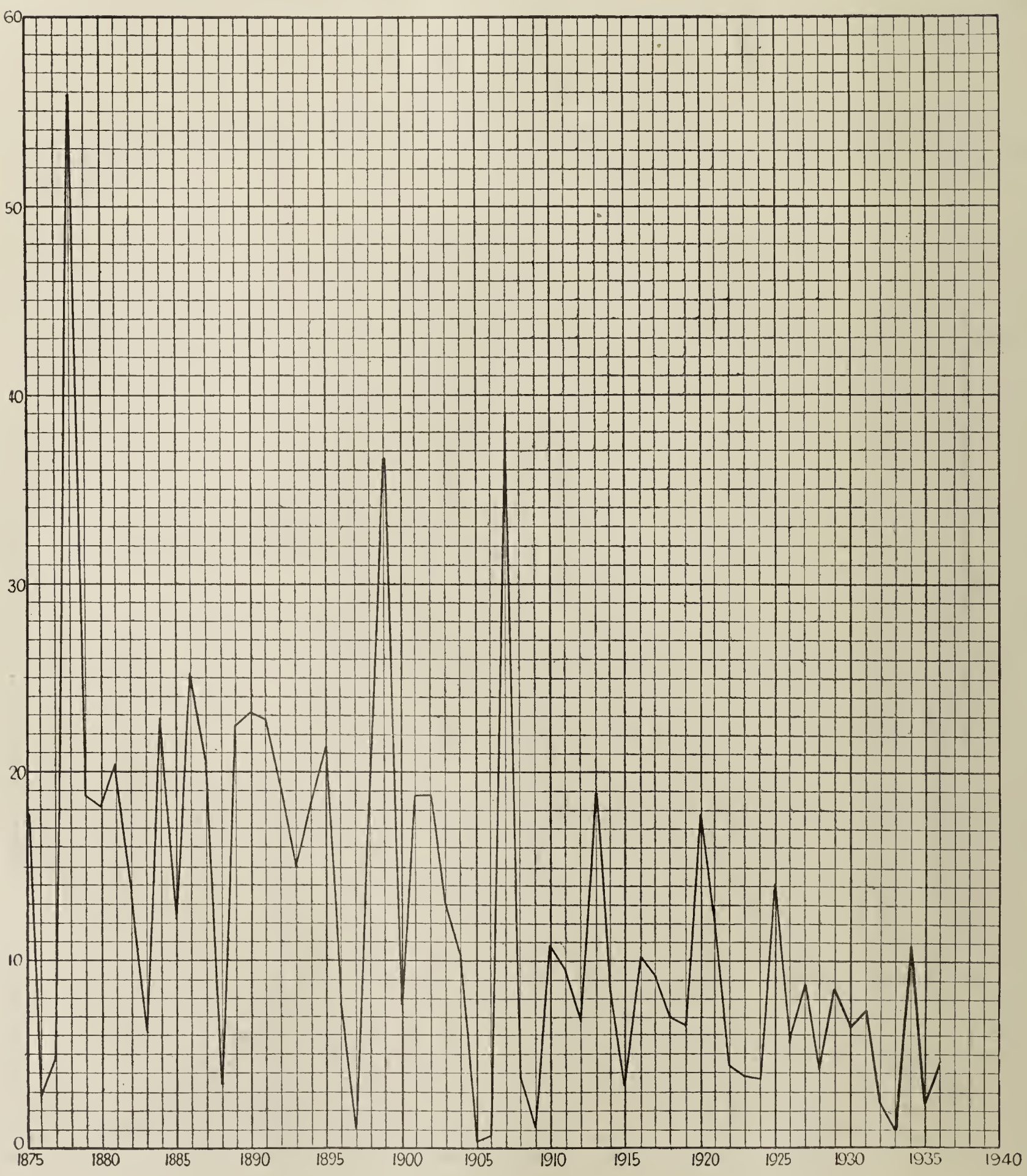
WHOOPING COUGH.

Annual Death Rate per 100,000 of the population in New South Wales, 1875-1936.



DIVISION OF VENEREAL DISEASES.

REPORT OF THE DIRECTOR, DIVISION OF VENEREAL DISEASES (J. COOPER BOOTH, M.B., Ch.B.) TO THE COMMISSIONER UNDER THE VENEREAL DISEASES ACT, 1918, (E. SYDNEY MORRIS, M.D., Ch.M., D.P.H., DIRECTOR-GENERAL OF PUBLIC HEALTH) FOR THE YEAR ENDED 31st DECEMBER, 1936.

Staff.

Director: J. Cooper Booth, M.B., Ch.B.; Medical Officers: J. H. Abbot, M.B., Ch.M.; H. V. Hanson, M.B., Ch.M.; F. W. Fraser, M.B., Ch.M.; Clerical: L. Maher and three assistants; Clinic Assistant: R. C. Lewry and five assistants.

The report on the operation of the Venereal Diseases Act, 1918, for the year 1936 gives some idea of the notified incidence of venereal disease in New South Wales. The true incidence is unknown and will remain so until all persons who are infected are treated by legally qualified medical practitioners and their attendance is notified according to the requirements of the Act.

A decrease in the number of persons reporting with a primary syphilitic infection has been noticeable. This is in keeping with observations in many other countries. At our Divisional Clinic we see an average of about twenty chancres yearly. Other clinics in the State see less. Whether this apparent decrease in primary syphilis is a true decrease or whether the majority of inoculations produce a reaction so mild as to escape notice is difficult to judge at present. From our routine tests for syphilis we know that some infections have passed unnoticed by the patient, for among those who have attended for a gonococcal infection we have found 1·1 per cent. unsuspected syphilis during 1936. In the previous year the figure was 1·8 per cent.

Most of the patients who attend at our clinic for treatment of syphilis have either a history of infection several years prior to attendance or cannot give any information which might help to date the infection.

In males 6·8 per cent. of the new registrations during 1936 suffering from syphilis were aged 20 years and under, and 12·5 per cent. were aged 25 years and under. The peak age group was "over 50 years" and this accounted for 33·9 per cent. of notified syphilis in males during the year. In this sex the discovery of infection usually comes late in life when some physical disorganiation has occurred.

Females infected with syphilis are detected earlier, and 15·8 per cent. of their notifications during 1936 were for those aged 20 years and under and 29·7 per cent for those aged 25 years and under. Their over 50 group accounted for only 7·6 per cent. of such notifications.

Gonorrhoea has increased during the year by 17·2 per 100,000 of population as compared with last year. Its incidence is the highest since 1930. This is essentially a disease of youth and of the years of young manhood and young womanhood. In males 14·1 per cent. of their notifications were for those aged 20 years and under and 42·24 per cent for those aged 25 years and under. In females 35 per cent. of their notifications for gonorrhoea were for those aged 20 years and under and 60·3 per cent. for those aged 25 years and under.

Venereal disease infection is not merely due to ignorance and misfortune, but in too many instances is a result of carelessness and laziness. During the year, 280 former patients of our Divisional clinic returned with fresh infections, and of these 34 (12·1 per cent.) were aged 20 years and under. Ten of those who returned were infected with syphilis. All these patients knew of the prophylactic facilities available but none had attempted to protect themselves.

Prophylaxis was used by 999 persons during the year. Of these 999, only 200 had associated with a prostitute prior to seeking protection. The prostitute is not the chief source of infection in Sydney and our investigations indicate that it is doubtful if she is responsible for even one-third of the infections. The amateur is the greater problem.

Promiscuous sexual intercourse between men and women in similar spheres of life or meeting under similar social conditions appears to have increased with the improvement in contraceptive methods, and the services of the prostitute are not necessary.

Alcohol is a too common factor in the relaxation of morals, and its presence at dances in uncontrolled amounts is frequently disastrous. I have seen many young women, and some older ones, who have blamed a convivial night at a dance for their infection. The amateur appears to be as easy of approach under such circumstances as the prostitute but not so careful. A girl who is usually discreet in her actions may, under the combined stimulus of alcohol and a dance, give her body intimately to a complete stranger whose company in less exciting moments would be repugnant to her. At present youth sees no stable future, and a number are attempting to crowd the sensations of an adventurous lifetime into a few years of shabby sordid, passionate living. Many will pass into a resentful middle age burnt out and useless.

In the report for 1934 I suggested that a Board consisting of a representative from each State and from the Commonwealth should meet at least twice in each year in a capital city, in rotation, and confer on methods of administration and treatment. I once again bring this recommendation under notice. Until we have co-operation within the State and co-ordination between the States, we cannot hope to make much progress in the control of venereal disease in Australia.

VENEREAL DISEASES ACT, 1918.

REPORT ON NOTIFICATIONS RECEIVED FOR YEAR ENDED 31st DECEMBER, 1936.

Five thousand one hundred and sixty notifications of venereal disease were received during 1936, an increase of 331 compared with 1935. Of the notifications, 25·64 per cent. came from private medical practitioners as compared with 30·09 per cent. in 1935, and 41·07 per cent. in 1934.

Syphilis.—Of the 5,160 total notifications received during 1936, 1,060 were for cases of Syphilis (males 744, and females 316) a figure 83 below that for 1935. The sex ratio of notified cases of Syphilis for 1936 was 2·35 males to 1 female. Of the cases of Syphilis notified in 1936, 9·62 per cent. were being treated privately as compared with 11·37 per cent. in 1935, and 14·55 per cent. in 1934. Of the total notifications of venereal disease in 1936, Syphilis contributed 20·54 per cent. compared with 23·67 per cent. in 1935 and 23·72 per cent. in 1934.

The notifications of Syphilis gave a ratio of 39·5 per 100,000 of population for 1936, compared with 43·2 per 100,000 in 1935, and 42·69 per 100,000 in 1934.

Gonorrhoea.—Of the 5,160 total notifications received during 1936, 3,737 were cases of Gonorrhoea (males 3,120, and females 617) a figure 508 in excess of that for 1935. The sex ratio of notified cases of gonorrhoea was 5·06 males to 1 female. Of the cases of Gonorrhoea notified in 1936, 25·21 per cent. were being treated privately as compared with 28·96 per cent. in 1935, and 43·25 per cent. in 1934. The percentage of cases of Gonorrhoea notified in the total notifications of venereal disease was 72·42 per cent., compared with 66·87 per cent. in 1935 and 66·70 per cent. in 1934.

The notifications of Gonorrhoea gave a rate of 139·3 per 100,000 of population for 1936, compared with 122·1 per 100,000 in 1935, and 120·02 per 100,000 in 1934.

Other forms of Venereal Disease.

Soft Chancre (Chancroid).—Two cases (both male) were notified being ·04 per cent. of the total notifications, compared with ·10 per cent. in 1935, and ·15 per cent. in 1934.

Gonococcal Ophthalmia.—Eight cases (4 male and 4 female) were notified, being ·15 per cent. of the total notifications for 1936 compared with ·41 per cent. in 1935, and ·02 per cent. in 1934.

Venereal Warts.—Thirty seven cases (all male) were notified, being ·72 per cent. of the total notifications for 1936, compared with 1·62 per cent. for 1935, and ·19 per cent. in 1934.

Gleet.—Three hundred and sixteen cases (314 male and 2 female) were notified, being 6·12 per cent. of the total notifications for 1936, compared with 8·26 per cent. in 1935, and 9·17 per cent. in 1934.

Venereal Granuloma.—There were no notifications.

76·8 per cent. of notifications under the above group heading (other forms of venereal disease) came from private medical practitioners.

Venereal Diseases Notifications, 1929 to 1936 (inclusive).

Year.	Total. Notifications.	Percentage Grouping in Notifications for year.			Mean Population.	Rate per 10,000 of Mean Population.		
		Syphilis.	Gonorrhoea.	Other V.D.		Syphilis.	Gonorrhoea.	Other V.D.
1929	5,226	19·04	76·14	4·82	2,464,510	4·04	16·14	1·02
1930	5,225	27·02	68·08	4·90	2,489,657	5·67	14·29	1·03
1931	4,617	24·26	68·96	6·78	2,510,083	4·46	12·46	1·25
1932	4,842	29·16	65·34	5·50	2,531,330	5·57	12·50	1·06
1933	4,809	27·01	66·48	6·51	2,602,037	4·99	12·29	1·20
1934	4,721	23·72	66·70	9·58	2,623,817	4·27	12·00	1·72
1935	4,829	23·67	66·87	9·46	2,645,575	4·32	12·21	1·72
1936	5,160	20·54	72·42	7·04	2,681,736	3·95	13·93	1.35

Sex Ratio in Venereal Disease Notifications.

The sex ratio for the total notifications of venereal disease for 1936 is 4·49 males to one female. The figures for the past sixteen years are as follows :—

1921	...	6·44	males to 1 female.	1929	...	5·28	males to 1 female.
1922	...	7·69	,, ,,	1930	...	4·40	,, ,,
1923	...	8·72	,, ,,	1931	...	3·94	.. ,,
1924	...	7·83	.. ,,	1932	...	4·27	,, ,,
1925	...	7·75	,, ,,	1933	...	4·21	,, ,,
1926	...	6·73	,, ,,	1934	...	3·68	,, ,,
1927	...	6·31	,, ,,	1935	...	4·22	,, ,,
1928	...	5·00	,, ,,	1936	...	4·49	,, ,,

Failure to Continue Treatment.

During 1936 the names and address of 1,825 defaulters (1,447 males and 378 females) were notified—a figure 304 in excess of that for 1935. Owing to incorrect information having been given or patients having failed to notify change of address, 671 letters were returned unclaimed giving 36·77 per centum undelivered letters compared with 39·84 per centum in 1935, and 45·17 per centum in 1934.

The following table shows the percentage of notified defaulters in the last five years who remained apparent permanent defaulters :—

Year.	Total Defaulters Notified.	Resumed Treatment, Dead, or Left State.	Remained in Default.	Percentage Remaining in Default.
1932	572	268	304	53·15
1933	713	191	522	73·21
1934	1,472	767	705	47·89
1935	1,521	860	661	43·46
1936	1,825	860	965	52·88

Clinics.

Attendances at clinics for males numbered 184,413 for 1936 (70·6 per centum of this total being at the Health Department Clinic) compared with 158,902 for 1935 and 138,567 for 1934.

At clinics for females the attendances were 31,975 for 1936, compared with 33,144 for 1935, and 30,167 for 1934.

The sex ratio of attendances was 5·77 males to one female in 1936, compared with 4·79 males to one female in 1935, and 4·59 males to one female in 1934.

Metropolitan District.—No new clinics were opened in 1936. Ten clinics are available. The clinic at the Health Department for males is continuous, and the Special Clinic at the Rachel Forster Hospital has six sessions a week for women and children.

Newcastle District.—There has been a further slight increase in the number of notifications received from this district, but the number of infections is still far below what might be expected in a city the size of Newcastle. Of the 345 total notifications received from this area, 230 came from the Newcastle Hospital. This hospital showed an increase of 25 per centum in attendances for 1936 compared with 1935.

District General Hospitals.—District hospitals outside the Metropolitan area have provided treatment for persons suffering from venereal disease. It is possible to obtain treatment for syphilis now at most hospitals in the State. We still have difficulty in obtaining treatment for Gonococcal infections, although we do not ask impossibilities, but only co-operation in so far as it lies within the powers of the hospital concerned.

Bed Accommodation.—Beds are available for 23 males and 59 females. There has been a reduction in the number of beds available for males on account of the Prince Henry Hospital passing from the control of the Health Department.

Health Department Clinic, 93 Macquarie-street, Sydney.—This clinic (for males) in the Division of Venereal Diseases continues to grow and has now outgrown its quarters. 52·9 per centum of all notified gonorrhoea in the male and 37·1 per centum of all notified syphilis in the male for the year 1936 was notified from this clinic.

The following figures give a record of the registrations and discharges for 1936 :—

Patients carried forward from 1935			1,498
New patients registered in 1936	3,499		
Former patients who have re-attended after discharge	1,043		
	4,542		
Gonorrhoea	1,654		
Syphilis	276		
Venereal Warts	34		
Chancroids	...		
	1,964		
Non-Venereal	2,578		
	4,542		4,542
Total			6,040

Attendances—130,271.

Return showing cases finalised at the Divisional Clinic during 1936 :—

	Syphilis.	Gonorrhoea.	Venereal Warts.	Non-Venereal.	Chancroid.	Not Diagnosed.	Total.
Discharged	39	963	18	2,200	...	...	3,220
Transfers	60	188	3	32	...	52	335
Left New South Wales	83	140	4	44	...	69	340
Defaulters	74	250	...	12	...	124	460
Total	256	1,541	25	2,288	...	245	4,355
Patients remaining on Clinic and carried forward to 1937							1,685
Total under treatment							6,040

Of the 6,040 cases under treatment 7·6 per centum became permanent defaulters, showing an improvement of 2·3 per centum as compared with 9·9 per centum for 1935.

Pathological Examinations.—Table 3 shows the use made of laboratory tests for diagnostic purposes and progress reports. In 1936, 40,610 seralogical tests were made on 18,687 specimens, in 1935 the tests were 34,829 on 16,017 specimens, and in 1933, 35,410 on 16,020 specimens.

In 1936, 17,288 smears were examined for the detection of gonococci as compared with 13,726 smears in 1935, and 12,785 in 1934. Examinations for spirochaetes numbered 88 in 1936 compared with 97 in 1935 and 85 in 1934.

Prosecutions.—There were two prosecutions under the Venereal Diseases Act, 1918 :—

1. Action taken for breach of Section 5—Fine £5, plus 8s. costs.
2. Action taken for breach of Section 25—Fine £1, plus 8s. costs.

The following Tables are Appended :—

Table 1.—Notifications received during the year 1936 arranged in order of district from which the notifications are received.

Table 2.—Return of cases of Venereal Disease notified during 1936 showing forms of disease and age and sex of patients.

Table 3.—Diagnostic examinations for Venereal Disease made in the Microbiological Laboratory during the years 1934 to 1936, inclusive.

Table 4.—Summary of annual attendances at public clinics, 1934 to 1936.

TABLE 1.—Notifications received during 1934–1936, arranged in order of Districts.

Disease.	Metropolitan Area.			Newcastle District.			Remainder of State.		
	1934.	1935.	1936.	1934.	1935.	1936.	1934.	1935.	1936.
Gonorrhoea	2,868	2,851	3,261	128	220	291	153	158	185
Syphilis	1,006	1,041	992	83	74	44	31	28	24
Soft Chancre	7	5	2	...	...	...	...	...	...
Gleet	433	378	306	...	21	10	...	...	...
Venereal Warts	9	29	37	...	...	...	...	1	...
Gonorrhoeal Ophthalmia	1	2	1	...	...	...	...	18	7
Venereal Granuloma	2	3	...	...	...	...	...	...	...
Totals	4,326	4,309	4,599	211	315	345	184	205	216

TABLE 2.—Return of Cases of Venereal Disease notified during 1936, showing forms of Disease and Age and Sex of Patients.

Disease.	0–5.		6–10.		11–15.		16–20.		21–25.		26–30.		31–35		36–40.		41–45.		46–50.		Over 50.		Age not Stated.		Totals.		Grand Total.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Gonorrhoea	2	31	...	21	10	11	430	153	876	156	725	99	420	61	247	36	169	14	125	15	102	11	14	9	3,120	617	3,737
Syphilis	16	11	7	11	9	7	19	21	42	43	65	45	57	38	91	45	83	35	97	28	253	24	5	8	744	316	1,060
Soft Chancre	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	2
Gleet	...	...	...	...	...	...	8	...	60	...	59	...	65	...	55	...	38	...	18	...	9	2	2	...	314	2	316
Venereal Warts	...	...	...	...	...	...	2	...	14	...	10	...	4	...	3	...	2	...	1	...	1	...	...	...	37	...	37
Gonorrhoeal Ophthalmia.	3	3	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	4	4	8
Venereal Granuloma	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	21	45	7	32	19	18	459	174	994	199	859	145	546	99	396	81	292	49	241	43	366	37	21	17	4,221	939	5,160

TABLE 3.—Diagnostic Examinations for Venereal Diseases made in the Microbiological Laboratory during the years 1934–1936, inclusive.

Year.	Gonorrhoea (Smears and Urine).	Gonorrhoea (Complement Deviation Test).	Syphilis (Wassermann Reaction).	Syphilis (Kahn's Test).	Syphilis (Smears Spirochaetes).
1934	12,785	5,294	16,020	14,096	85
1935	13,726	3,511	16,017	15,301	97
1936	17,288	3,822	18,687	18,101	88

TABLE 4—Showing Annual Attendance Returns at Public Clinics for Treatment of Venereal Diseases, 1934–1936 inclusive.

Year.	Attendances.			New Cases.					
				Gonorrhoea.			Syphilis.		
	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.
Royal Prince Alfred Hospital.									
1934	28,465	6,315	34,780	306	71	377	29	21	50
1935	22,818	5,833	28,651	251	59	310	31	36	67
1936	17,771	5,036	22,807	209	52	261	20	20	40
Sydney Hospital.									
1934	13,631	5,879	19,510	252	24	276	95	46	141
1935	11,022	5,831	16,853	85	8	93	66	57	123
1936	10,379	5,181	15,560	164	5	169	50	39	89
Royal Alexandra Hospital for Children.									
1934	589	1,600	2,189	...	27	27	7	8	15
1935	624	1,050	1,674	...	7	7	14	12	26
1936	1,654	1,071	2,725	...	16	16	8	9	17
Royal South Sydney Hospital.									
1934	3,089	1,281	4,270	61	5	66	11	7	18
1935	1,563	741	2,304	37	1	38	10	1	11
1936	2,628	837	3,465	29	3	32	10	5	15
Royal North Shore Hospital.									
1934	4,299	1,702	6,001	47	17	64	11	19	30
1935	3,365	1,416	4,781	56	2	58	7	7	14
1936	2,340	1,267	3,607	63	15	78	4	14	18
Rachel Forster Hospital for Women and Children.									
1934	...	12,057	12,057	...	132	132	...	112	112
1935	352	13,527	13,879	...	145	145	6	129	135
1936	...	14,348	14,348	...	240	240	...	102	102
Balmain District Hospital.									
1934	629	963	1,592	...	...	...	5	9	14
1935	816	776	1,592	...	...	...	7	11	18
1936	808	633	1,441	...	...	...	4	5	9
Parramatta District Hospital.									
1934	669	314	983	7	5	12	2	3	5
1935	1,158	296	1,454	19	7	26	10	3	13
1936	1,454	448	1,902	24	11	35	9	5	14
St. George District Hospital, Kogarah.									
1934	77	56	133	2	...	2	2	2	4
1935	403	406	809	...	...	...	5	3	8
1936	317	441	758	...	...	...	6	5	11
Newcastle District Hospital.									
1935	11,441	3,188	14,629	148	34	182	23	30	53
1936	16,791	2,713	19,504	154	37	191	25	14	39
Health Department Clinic.									
1934	87,119	...	87,119	977	...	977	316	...	316
1935	105,207	...	105,207	1,248	...	1,248	266	...	266
1936	130,271	...	130,271	1,654	...	1,654	276	...	276

SECTION I.—D.

TUBERCULOSIS DIVISION.

ANNUAL REPORT OF THE DIRECTOR FOR THE YEAR ENDED 31ST DECEMBER, 1936.

Staff.

Director: Dr. H. G. Wallace, M.B., B.S., D.P.H. (Melb.).
Medical Officer: Dr. J. Hughes, M.B., Ch.M. (Syd.).
1 Clerk; 4 nurses.

The steady increase in the activities of the Tuberculosis Division, following on the stressing of the familial aspects of the epidemiology of tuberculous infections, has been with difficulty maintained throughout the year by the existing staff. The emphasis given to the necessity for the periodical examination of contacts, especially young adults, has resulted in some congestion at the metropolitan clinics.

It is hoped that this difficulty will be relieved in the near future by the establishment of additional Anti-tuberculosis Clinics in the metropolitan area, situated at strategic points which will reduce the distances which at present must be traversed by persons in indigent circumstances seeking advice and medical attention at a Clinic.

The transfer of the control of the Prince Henry Hospital from this department to a Board constituted under the Prince Henry Hospital Act of 1936, which took place on 1st August, 1936, resulted in the separation of the Randwick Auxiliary from the Prince Henry Hospital. The Auxiliary has been retained by this department as a departmental institution under the name of the Randwick Auxiliary Hospital.

Essential services have been maintained at the hospital and by arrangement with the authorities in charge of the Prince of Wales Military Hospital adjoining, facilities for radiological and minor operative work have been provided by that institution. The constant demand for beds at the Randwick Auxiliary Hospital renders it desirable that additional wards should be opened, but some difficulty is likely to be encountered in accommodating the additional nursing staff which would be required, the existing Nurses' Home being inadequate to meet the probable future requirements in this respect. Increased pathological services at this hospital are also urgently necessary, the type of work involved requiring the services of a pathologist who could visit the hospital and carry out examinations on the spot.

No meetings of the Board of Control of the Campaign against Tuberculosis were held during the year, pending consideration by the Government of the comprehensive scheme for tuberculosis control put forward by the Board in 1935. It is understood that this matter is being given consideration and that an early decision in the matter may be anticipated.

The public hospitals and voluntary agencies co-operating with the Division maintained close association with it throughout the year. Most of the institutions were visited by the departmental medical staff during the year in order to facilitate the exchange of information in detail and to maintain the fullest mutual assistance.

The Medical Officer, in addition to the routine work of his office and the visiting of patients in order to advise regarding appropriate methods of prevention and treatment, addressed a number of selected audiences on the subject of Tuberculosis and its prevention, and delivered broadcasts on several occasions The importance of health publicity of this kind was shown in the response by many of his audiences in coming forward for further information and advice on the subject of his talks.

The proposed amendment of the Public Health Act under the provisions of which it is proposed that all forms of tuberculosis shall become compulsorily notifiable throughout the State, has not yet been placed before Parliament, the draft of the amendments having been subjected to further revision.

Notification.—The total number of notifications of cases of pulmonary tuberculosis with positive sputum in the State during 1936 was 1,372, a decrease of 200 cases compared with the total for 1935. In the Metropolitan District there was a decrease amounting to 178 cases; in the Hunter River District a decrease of 15 cases, and in the remainder of the State a decrease of 7 cases. There can be no doubt that this indicates a real falling off in the incidence of notifiable cases, as diagnostic facilities are more readily available than ever before. Nevertheless, far too many cases are still left unrecognised until the disease has made severe inroads, and it is in the early diagnosis of tuberculosis at a stage when cure can be more easily effected that progress must be looked for.

Deaths from pulmonary tuberculosis in 1936, amounted to 955, compared with 939 in 1935. Details showing the age and sex of persons who died from pulmonary tuberculosis together with other statistical data are given in the Tables set out hereunder.

Publicity.—The relatively small amount of public educational activities in which the Division has been able to engage (apart from contact with notified patients and their families) though meagre in quantity has shown the value of such public health propaganda. The screening of motion picture films in country towns by the publicity officer and the addresses and broadcasts to selected audiences given by the medical staff have brought very encouraging results.

More up-to-date films, especially those depicting departmental activities, would enable the interest of a wider public to be aroused. If a portable sound-film projector, similar to those in use by various metropolitan public schools could be obtained it would enable a lecture to be suitably supplemented by visual impressions, and so reinforce the health message given by the lecturer.

Home Visiting of Patients.—The important work of visiting patients in their homes is carried out in the metropolitan area of Sydney by the nurses on the staff of two of the three anti-tuberculosis clinics and by the medical officers and nurses of the Tuberculosis Division.

TUBERCULOSIS.

Annual Death Rate per 100,000 of the Population in New South Wales, 1875-1936.

In the Newcastle District visiting is carried out by the Medical Officer of Health and by a departmental nurse who assists at the Newcastle Hospital Clinic. It is only rarely that patients can be visited in other portions of the State.

Home visiting in the metropolitan area is handicapped owing to the fact that between eight hundred and one thousand cases are notified each year as suitable to be visited, who, together with contacts, make up a total which is beyond the capacity of the existing staff to deal with adequately. At least four additional visiting nurses are required in order to enable this activity to be adequately served.

Need for additional Anti-tuberculosis Clinics.—A most hopeful indication of public co-operation, and an augury of future progress in preventing tuberculosis is the increasing number of family contacts coming forward for examination at the anti-tuberculosis clinics.

Several of the existing clinics are overcrowded, and there is no doubt that the cost of the fares necessary to bring a whole family several times to the clinic acts as a deterrent in the case of persons in indigent circumstances, particularly when the clinic is situated at some distance from their homes.

The establishment of additional clinics in the metropolitan area at which the full resources of a public hospital could be made available would meet this difficulty to a great extent. It is anticipated that the provision of four or five additional clinics at metropolitan hospitals would not only relieve the strain on existing clinics, but by bringing the clinic service nearer the homes of the sufferers would stimulate and facilitate the early examination of contacts.

Urgent Requirements.—(1) The presence in sanatoria, especially Waterfall Sanatorium, of a type of patient variously described as " middle aged chronic cases " or " male incorrigibles " is a distinct handicap to the smooth working of such institutions. These patients are often unwilling to observe the necessary routine of a sanatorium and come and go at intervals. Their presence is upsetting to the younger patients and it would be of advantage if they could be accommodated in a separate institution. The provision of some twenty to thirty beds in a dormitory attached to some more suitable institution would be adequate to deal with these cases, and is urgently required.

(2) Mention has been made elsewhere of the necessity for the establishment of at least four additional anti-tuberculosis clinics in the metropolitan area and the desirability of a corresponding increase in the visiting staff of the Division.

(3) Additional accommodation for both nurses and patients at the Randwick Auxiliary Hospital, and provision of arrangements for a visiting pathologist are urgently required.

(4) The provision of special facilities, preferably in connection with a metropolitan hospital, for the surgical and other special treatment of cases of pulmonary tuberculosis is regarded as an urgent requirement.

(5) Provision of a resident pathologist at Waterfall Sanatorium, qualified to do clinical work in the wards as well, would enable more intensive linking of clinical and pathological services to be undertaken.

Investigational Work.—Dr. J. Hughes has continued further investigations into the after-histories of patients discharged from Sanatoria during the year 1931. The results of this investigation are attached hereto as a separate appendix (page 77).

Co-ordination of Anti-tuberculosis Activities.—The thanks of the Division are due to the various hospitals and other governmental and voluntary agencies which have given their active assistance and energetic co-operation throughout the year; in particular to the New South Wales Division of the Red Cross Society, to the Anti-tuberculosis Association of New South Wales, to the Queen Victoria Homes and to the Boards of Management and officers of the Royal Prince Alfred Hospital, the Royal North Shore Hospital, and the Newcastle Hospital.

H. G. WALLACE,
Director.

Notifications.

TABLE 1.—Showing the age and sex incidence of the cases of Pulmonary Tuberculosis notified during the year 1936.

Age Period.	Metropolitan Combined Sanitary District. Mean Population: 1,332,060			Hunter River Combined Sanitary District. Mean Population: 217,200			Broken Hill Combined Sanitary District. Mean Population: 27,120			Remainder of State. Mean Population: 1,118,579			Whole State. Mean Population: 2,667,839		
	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.
Under 1 year	1	...	1	...	...	...	...	...	...	...	...	...	1	...	1
1–4	2	2	4	...	...	...	...	...	...	1	1	2	3	3	6
5–14	4	2	6	1	...	1	...	1	1	3	2	5	8	5	13
15–24	71	107	178	5	9	14	...	...	...	13	32	45	89	148	237
25–34	123	120	243	7	11	18	1	2	3	29	36	65	160	169	329
35–44	117	91	208	12	4	16	1	...	1	31	21	52	161	116	277
45–54	142	32	174	14	5	19	4	...	4	32	9	41	192	46	238
55–64	112	30	142	10	4	14	...	...	...	15	10	25	137	44	181
65 and over	42	24	66	3	2	5	...	...	...	11	8	19	56	34	90
All ages	614	408	1,022	52	35	87	6	3	9	135	119	254	807	565	1,372

TABLE 2.—Showing monthly incidence of notified cases of Pulmonary Tuberculosis and also incidence of cases "To be Visited" and cases "Not to be Visited," year 1936.

Month.	Metropolitan Combined Sanitary District.		Hunter River Combined Sanitary District.		Broken Hill Combined Sanitary District.		Remainder of State.		Whole State.	
	To be Visited.	Not to be Visited.	To be Visited.	Not to be Visited.	To be Visited.	Not to be Visited.	To be Visited.	Not to be Visited.	To be Visited.	Not to be Visited.
January	76	23	12	3	...	...	24	7	112	33
February	72	10	2	1	1	...	17	9	92	20
March	45	14	7	1	...	1	10	5	62	21
April	85	12	1	2	...	...	10	8	96	22
May	75	24	9	5	...	...	13	9	97	38
June	74	21	1	1	1	...	5	9	81	30
July	54	11	3	3	3	...	12	12	72	26
August	67	19	8	...	...	...	9	6	84	25
September	65	14	2	...	1	...	12	7	80	22
October	58	20	7	4	2	...	14	11	81	35
November	56	19	7	3	...	...	14	10	77	32
December	91	17	1	4	...	...	14	7	106	28
Totals	818	204	60	27	8	1	154	100	1,040	332

Deaths.

TABLE 3.—Showing the number of deaths from all forms of Tuberculosis in (*a*) Metropolis, (*b*) whole State, during the year ended 31st December, 1936.

	Metropolis.			Whole State.		
	Males.	Females.	Total.	Males.	Females.	Total.
Respiratory system	338	205	543	586	369	955
Meninges and nervous system	8	15	23	17	20	37
Other	21	12	33	33	26	59
Total	367	232	599	636	415	1,051

TABLE 4.—Showing the age and sex of the persons whose deaths from Pulmonary Tuberculosis were notified during the year ended 31st December, 1936.

Age Period.	Metropolitan Combined Sanitary District. Mean Population: 1,332,060			Hunter River Combined Sanitary District. Mean Population: 217,200			Broken Hill Combined Sanitary District. Mean Population: 27,120			Remainder of State. Mean Population: 1,118,579			Whole State. Mean Population: 2,667,839		
	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.
Under 1 year	1	...	1	...	...	...	...	...	...	...	...	...	1	...	1
1– 4 years	1	2	3	...	...	...	...	1	1	2	1	3	3	4	7
5–14 „	...	2	2	...	...	...	...	...	...	2	1	3	2	3	5
15–24 „	24	41	65	2	8	10	...	...	...	10	17	27	36	66	102
25–34 „	48	64	112	3	9	12	...	...	...	27	34	61	78	107	185
35–44 „	73	49	122	6	6	12	1	2	3	32	23	55	112	80	192
45–54 „	108	18	126	11	6	17	3	...	3	40	14	54	162	38	200
55–64 „	71	21	92	11	5	16	3	...	3	33	8	41	118	34	152
65 and over	44	22	66	5	5	10	1	...	1	24	10	34	74	37	111
All ages	370	219	589	38	39	77	8	3	11	170	108	278	586	369	955

TABLE 5.—Showing Institutional Accommodation available for patients suffering from Pulmonary Tuberculosis.

Sanatoria and Hospitals.	Type of Cases Received.	Number of Beds.		
		Male.	Female.	Total.
1. Waterfall Sanatorium (under Government control)	Intermediate	264	136	400
2. Randwick Auxiliary Hospital (under Government control)	Late	90	30	120
3. Queen Victoria Homes (subsidised)—				
Thirlmere	Early female	...	54	54
Wentworth Falls	Early male	54	...	54
4. Red Cross Society (subsidised)—				
"Bodington" at Wentworth Falls	Early male and female	89	9	98
"Malahide" at Pennant Hills	Late male and female	15	6	21
"Southern" at Exeter	Male quiescent	20	...	20
(The above institutions work in full co-operation with the Tuberculosis Division.)				
R. T. Hall Sanatorium	...	4	4	8
Private Hospitals (approximately)	...	...	...	40
Repatriation Department—				
Prince of Wales Hospital	...	65	...	65
Lady Davidson Home	...	77	...	77
				927

TABLE 6.—Showing number of patients receiving Institutional treatment during 1936.

	Queen Victoria Sanatorium, Wentworth Falls.	Queen Victoria Sanatorium, Thirlmere.	Red Cross Sanatorium, Wentworth Falls.	Waterfall Sanatorium.	Red Cross Hospital, Pennant Hills.	Red Cross Convalescent Home, Exeter.
1. Number of patients in Institution on 1st Jan., 1936...	51	47	70	386	21	10
2. Number of patients admitted during 1936.....	68	84	91	495	22	43
3. Number of patients discharged (including deaths) during 1936	76	83	87	493	20	37
4. Number of patients remaining in Institution on 31st December, 1936	43	48	74	388	23	16
5. Average daily number of beds occupied	48·8	50·1	59·1	385	21·4	14·5

Average Residence in Sanatoria and Hospitals.

TABLE 7.—Showing the average residence in days and condition on discharge from Sanatoria and Hospitals of patients under treatment during 1936.

Condition on Discharge.	Queen Victoria Sanatorium, Wentworth Falls.		Queen Victoria Sanatorium, Thirlmere.		Red Cross Sanatorium, Wentworth Falls.		Waterfall Sanatorium.		Red Cross Hospital, Pennant Hills.		Red Cross Convalescent Home, Exeter.	
	No. of Patients.	Average Residence in Days.	No. of Patients.	Average Residence in Days.	No. of Patients.	Average Residence in Days.	No. of Patients.	Average Residence in Days.	No. of Patients.	Average Residence in Days.	No. of Patients.	Average Residence in Days.
1. Arrested (A.)	...	...	...	...	...	...	1	2,406	...	...	5	162·6
2. Quiescent (Q.)	30	302	49	256·6	22	554	16	378	1	217	3	161·3
3. Much Improved (M.I.) ...	23	347	6	256·5	24	246	124	297	1	288	...	...
4. Improved (I.)	16	187	11	185·5	18	187	220	145	...	...	36	84·1
5. Stationary (S.)	2	51	4	122·2	16	97	18	79	2	56	8	106·0
6. Worse (W.)	5	278	13	172·4	5	264	7	774	3	82	1	39·0
7. Dead (D.)	...	...	...	...	2	127	107	406	13	105	...	...
Total	76	285	83	225·1	87	282·6	493	257	20	111·4	53	98·3

TABLE 8.—Showing condition of patients on admission to, and discharge from, Institutions for the treatment of Pulmonary Tuberculosis during 1936.

Condition on Admission.	Queen Victoria Sanatorium, Wentworth Falls.								Queen Victoria Sanatorium, Thirlmere.								Red Cross Sanatorium, Wentworth Falls.								Waterfall Sanatorium.								Red Cross Hospital, Pennant Hills.							
	Condition on Discharge.								Condition on Discharge.								Condition on Discharge.								Condition on Discharge.								Condition on Discharge.							
	A.	Q.	M.I.	I.	S.	W.	D.	Total.	A.	Q.	M.I.	I.	S.	W.	D.	Total.	A.	Q.	M.I.	I.	S.	W.	D.	Total.	A.	Q.	M.I.	I.	S.	W.	D.	Total.	A.	Q.	M.I.	I.	S.	W.	D.	To
L1T1	...	3	...	1	...	..	...	4	...	21	1	...	..	1	...	23	...	11	6	2	2	...	1	22	1	2	...	1	..	...	...	4	...	...	...	...	...	...	...	..
L2T1	...	21	17	6	1	4	...	49	...	16	1	5	1	2	...	25	...	9	8	8	4	...	...	29	...	6	18	13	1	...	2	40	...	...	...	...	...	...	...	..
L1T2	...	...	...	...	...	...	...	...	...	3	...	...	1	...	...	4	...	...	...	...	...	...	...	...	...	...	...	1	..	...	...	1	...	...	...	...	...	...	..
L2T2	...	6	6	8	1	2	...	23	...	2	...	2	...	...	...	4	...	...	1	1	3	...	...	5	1	1	5	3	1	...	...	11	...	...	1	...	...	...	...	..
L3T1	...	...	...	...	...	...	...	...	...	5	3	3	...	3	...	14	...	2	8	6	5	3	...	24	...	5	52	98	9	3	22	189	...	...	...	...	...	...	...	..
L3T2	...	...	...	...	...	...	...	...	...	2	1	1	2	7	...	13	...	...	1	1	2	1	...	5	...	2	46	95	7	4	56	211	...	...	...	...	3	...	...	..
L1T3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..
L2T3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..
L3T3	...	...	...	..	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	1	1	2	...	...	3	8	...	...	27	38	...	...	...	...	3	13	
	...	30	23	15	2	6	..	76	...	49	6	11	4	13	..	83	..	22	24	18	16	5	2	87	2	16	124	220	18	7	107	494	...	...	1	...	3	3	13	

Clinics.

TABLE 9.—Comparative Statement of work carried out at the various Anti-Tuberculosis Dispensaries during a period of 12 months ended 30th June, 1937.

	Royal Prince Alfred Hospital.	Royal North Shore Hospital.	Anti-Tuberculosis Association of N.S.W.	Newcastle Throat and Chest Dispensary
1. Total number of attendances (including contacts)	9,818	2,260	9,785	3,023
2. Number of new patients (excluding contacts) examined during the year:—				
(*a*) Definitely tuberculous	290	178	129	38
(*b*) Non-tuberculous	137	730	623	103
(*c*) Diagnosis not completed	29	.....	8	40
3. Number of contacts examined during the year:—				
(*a*) Definitely tuberculous	288	178	52	5
(*b*) Non-tuberculous	556	215	514	112
(*c*) Diagnosis not completed	30	.....	38	70
4. Total number of nurses visits during year	2,345	4,730	2,616	291
5. Number of homes visited	1,646	608	904	96
6. Number of sputum examinations	456	183	835	100
7. Number of X-ray examinations:—				
(*a*) New cases	427	173	511	181
(*b*) Cases previously X-rayed at the Clinic.....	1,082	336	96	340
(*c*) Contacts	874	215	No record.	177
8. Number of cases on Clinic register at 30th June, 1937	2,914	1,725	467	597
9. Number of cases written off during the year as:—				
(*a*) Recovered	No record.	No record.	No record.	4
(*b*) Died.....	126	47	47	31
(*c*) Transferred elsewhere	830	215	No record.	8

Nursing Staff.

TABLE 10.—Comparative Statement of work performed by visiting nurses in the metropolitan area for the years 1932-1936, inclusive.

Year.	Total Visits by Nurses.			Total Visits by Departmental Nurses.		No. of Homes visited by all Nurses.		No. of Visits paid by all Nurses.		Average Number of Visits per Patient per Year.		
	Departmental Nurses.	Non-Departmental Nurses.	Total.	Dispensary Cases.	Non-Dispensary Cases.	Dispensary Cases.	Non-Dispensary Cases.	Dispensary Cases.	Non-Dispensary Cases.	Dispensary Cases.	Non-Dispensary Cases.	All Cases.
1932 ...	5,178	5,596	10,774	2,990	2,188	2,497	835	8,647	2,127	3·5	2·4	3·2
1933 ...	7,125	5,212	12,337	4,185	3,519	3,155	1,248	8,818	3,519	2·7	2·8	2·8
1934 ...	6,411	6,070	12,481	3,463	3,163	3,445	1,443	9,789	2,692	2·8	1·8	2·6
1935 ...	5,780	6,316	12,096	2,586	3,194	3,121	1,416	8,902	3,194	2·5	2·2	2·1
1936 ...	6,501	6,465	12,966	3,526	3,289	3,254	1,227	10,610	2,356	3·2	1·84	2·8

APPENDIX.

INVESTIGATION INTO THE AFTER-HISTORIES OF 686 PATIENTS ADMITTED TO VARIOUS SANATORIA IN NEW SOUTH WALES IN 1931.

(By Dr. John Hughes, Medical Officer, Tuberculosis Division.)

The 686 patients who have been followed up were admitted to Waterfall Sanatorium, the Queen Victoria Homes (Thirlmere: female patients; and Wentworth Falls: male patients); Bodington Red Cross Home; and the Exeter Red Cross Farm (male patients).

Waterfall sanatorium admits metropolitan cases, and cases from the country certified by the country practitioner as being "able to travel without escort, afebrile for at least a fortnight prior to date of the certificate and having a reasonable prospect of arrest of the disease": under these circumstances the patients range from early stage to late stage of the disease. The Queen Victoria Home at Thirlmere endeavours to admit only early stage cases among females; the Queen Victoria Home at Wentworth Falls endeavours to admit only early stage cases among males. Bodington Red Cross Home admits soldiers and civilians, and during the year 1931 admitted 2 female patients—early and middle stage cases of the diseases are admitted. Exeter Red Cross Farm admits only male patients who are in an arrested stage of the disease, and have been transferred to the Farm from Bodington, Wentworth Falls, or Waterfall on the recommendation of the medical officers of those institutions.

All of the cases under review were admitted in the order shown in the various tables of the respective Sanatoria.

"Malahide" is a Red Cross Sanatorium for third stage or bedridden cases.

Picton Lakes is a Village Settlement for healed cases, comprising cottages for married couples and a hostel for single men.

"Randwick" represents the Randwick Auxiliary Hospital which admits only third stage or bedridden cases.

"R" in the age column for admission to Waterfall—male and female—represents that the patient is a re-admission to Sanatorium having at some time previously been in one of the Sanatoria in the State. It is customary for a patient who is retrogressing at Bodington or either of the Queen Victoria Homes to be transferred to Waterfall Sanatorium.

Of the total of 686 patients admitted during 1931, 348 were found to be dead in 1936, *i.e.*, within a period of five years.

Sanatoria.	Number of persons admitted in 1931.	Number of deaths recorded among such admissions 1931 to December, 1936.	Died within 5 years, 348 (*i.e.*, 50·7 per cent.).		Of the 686 admissions in 1931, 248 sought re-admissions to Sanatoria within 5 years.	
			Year of death.	No. died.	Sanatoria.	No. who sought re-admission.
Waterfall—						
Males	316	188	1931	75	Waterfall	143 (males)
Females	154	97	1932	105	,, ...	51 (females)
Queen Victoria Homes—			1933	70	Queen Victoria Homes	
Wentworth Falls (males) ...	47	16	1934	40	Wentworth Falls	11 (males)
Thirlmere (females)	62	14	1935	26	Thirlmere	8 (females)
			1936	32		
Bodington Red Cross Home ...	81	24	.....	...	Bodington	27
Exeter Red Cross Farm	26	9	.....	...	Exeter	8
Total	686	348	.....	348	.....	248

TABLE showing the after-histories of 316 male patients admitted to the Waterfall Sanatorium during 1931.

Patient's No.	Age.	Period in Waterfall.	Further Admission to Sanatorium.	Period between Discharge and Re-admission.	Sputum.	X-Ray.	Died.
1	31	1 month	.....	.....	Negative	Positive.	
2	42	9 months	.....	.....	.....	Bilateral; partial pneumothorax left.	18–10–31
3	33	9 months	Randwick	Transferred	.....	.....	18–11–31
4	32	4 months	Waterfall ...	5 months	Positive...	Positive.....	10–2–33
5	41	8 months	Randwick	Transferred	Positive...	.....	19–9–31
6	25	3½ years	Randwick	Transferred	Positive...	Very extensive right *c* cavitation; left clear.	18–9–34
7	39	6 months	.....	.....	Positive...	Extensive active	28–7–31
8	R. 27	18 months	.....	.....	Positive...	Bilateral consolidation and cavitation.	2–4–35
9	R. 55	6 months	Randwick	20 months	Positive...	.....	27–5–32
10	20	6 months	Waterfall ...	9 months	Positive...	.....	6–2–35
11	23	3 months	.....	.....	Positive...	Extensive bilateral *c* apical collapse.	27–4–31
12	R. 47	2 weeks	.....	.....	.....	No records.	.....
13	49	1 day	.....	.....	.....	.....	.....
14	R. 20	12 months	Randwick	2 years	Negative	Both upper lobes.....	.....
15	R. 36	3 months	.....	.....	Positive...	Extensive chronic bilateral	24–3–31
16	44	6 months	.....	.....	.....	T.B. left lung	31–7–31
17	R. 17	4 months	.....	.....	Positive...	Extensive bilateral *c* cavitation.	6–5–31
18	37	7 months	Waterfall ...	4 months	Positive...	Extensive bilateral *c* cavitation.	13–3–33
19	R. 49	.....	.....	.....	Negative	Diffuse active bilateral	.....
20	R. 28	4 months	Randwick	Transferred	Positive...	.....	1–7–31
21	61	2¾ years	Waterfall ...	5 months	Positive...	.....	.....
22	21	4 months	Randwick	Transferred	.....	Bilateral mottling *c* ? cavitation.	26–8–31
23	45	.....	Waterfall ...	.....	Positive...	Cavitation left upper lobe...	1–4–34
24	R. 25	9 months	Randwick	Transferred	.....	Bilateral mottling pneumothorax right apex.	5–11–31
25	53	.....	.....	.....	.....	Extensive mottling right, mottling left apex.	.....
26	R. 64	10 months	Waterfall ...	1 month	.....	.....	1–4–32
27	R. 60	4 months	Randwick	Transferred	Positive...	.....	19–1–32
28	35	16 months	.....	.....	.....	Cavitation both upper lobes	.....
29	R. 29	6 months	Randwick	4 years	.....	Positive.....	.....
30	R. 30	1 month	Bodington	Transferred	Positive...	Old left *c* large cavity, slight right.	.....
31	50	4 months	Randwick	Transferred	Positive...	Well marked left *c* cavitation old right.	.....
32	36	14 months	.....	.....	.....	No records	27–4–32
33	22	3 years	.....	.....	Negative	Positive.....	.....
34	25	15 months	.....	.....	.....	.....	.....
35	35	1 month	Waterfall ...	2 months	Negative	Small patch right apex	.....
36	R. 53	1 year	.....	.....	Positive...	Extensive both upper lobes *c* cavitation.	27–1–32
37	30	7 months	.....	.....	Negative	Chronic phthisis *c* small cavities.	.....
38	R. 51	6 months	.....	.....	Positive...	Extensive left *c* cavitation, chronic right upper.	24–8–31
39	R. 31	3 months	Randwick	1 month	Positive...	Well marked whole right, also left upper.	10–10–31
40	46	2 years	.....	.....	.....	No records	2–3–33
41	R. 25	5 months	.....	.....	Positive...	Advanced bilateral *c* cavitation.	15–7–31
42	62	5 months	.....	.....	Positive...	.....	7–3–31
43	25	3 months	.....	.....	Positive...	Extensive left *c* cavitation, recent active right.	10–10–33
44	R. 29	1 month	Randwick	4 months	Positive...	Extensive active upper half both.	13–8–31
45	R. 18	8 months	Randwick	3 months	Positive...	.....	9–3–32
46	33	5 months	.....	.....	.....	Chronic bilateral	.....
47	R. 27	12 months	.....	.....	Positive...	Extensive bilateral	1–3–32
48	R. 74	4 months	Randwick	Transferred	.....	Extensive bilateral mottling	19–1–34
49	24	7 months	.....	.....	Positive...	.....	5–1–32
50	R. 63	3½ years	Randwick	Transferred	Positive...	.....	.....
51	56	13 months	.....	.....	Positive...	.....	14–3–32
52	30	2 months	.....	.....	Positive...	.....	2–4–31
53	R. 40	3 months	Wentworth Falls.	6 weeks	Positive...	Extensive right	8–6–32
54	42	3 months	.....	.....	Positive...	.....	6–7–31
55	38	20 months	Exeter	Transferred	Positive...	.....	.....
56	42	5 months	.....	.....	Positive...	Bilateral T.B.	.....
57	47	.....	.....	.....	Positive...	Bilateral T.B.	.....
58	29	5 months	Randwick	9 months	.....	Large cavity right, active left upper lobe.	13–4–32
59	69	5 years	.....	.....	.....	No records	.....
60	30	18 months	Waterfall ...	3 months	Positive...	Bilateral mottling	.....
61	8	2 months	.....	.....	.....	Increased mottling lower half right.	.....
62	56	14 months	.....	.....	Positive...	.....	.....
63	55	6 months	.....	.....	Positive...	.....	12–8–31
64	56	8 months	.....	.....	Positive...	.....	.....
65	27	9 months	Randwick	14 months	Positive...	.....	16–5–33
66	60	3 months	.....	.....	Positive...	.....	14–10–31

TABLE showing the after-histories of 316 male patients admitted to the Waterfall Sanatorium during 1931—*continued.*

Patient's No.	Age.	Period in Waterfall.	Further Admission to Sanatorium.	Period between Discharge and Re-admission.	Sputum.	X-Ray.	Died.
67	54	14 months	Randwick	Transferred ...	Positive...	.....	19–5–32
68	R. 42	1 month	.....	.....	Positive...	.....	28–4–31
69	R. 33	15 months	Randwick	Transferred	Positive...	Extensive bilateral	11–7–32
70	24	4 months	.....	.....	Positive...	Left apical mottling	.....
71	54	1 month	Waterfall ...	7 months	Positive...	Well marked *c* cavitation, left upper lobe.	17–6–33
72	33	2 months	.....	.....	Positive...	Bilateral mottling upper half both *c* cavitation.	.....
73	48	1 month	.....	.....	Positive...	Extensive sub-acute right, exudative left.	.....
74	21	16 months	.....	.....	Positive...	.....	.....
75	54	9 months	Randwick	8 months	Positive...	.....	27–10–33
76	44	6 months	.....	.....	Positive...	Very extensive bilateral ...	1933.
77	58	4 months	.....	.....	Negative	Bilateral caseating	5–5–33
78	18	14 months	.....	.....	.....	No records	.....
79	53	4 months	Bodington	6 months	Positive...	.....	26–5–36
80	57	1 month	Waterfall ...	2 years	Positive...	Advanced bilateral *c* cavitation, right infra clavic.	.....
81	R. 55	8 months	Randwick	20 months	Positive...	Extensive mottling right ...	15–9–35
82	28	17 months	Randwick	Transferred	Positive...	Old chronic left, no activity	2–12–32
83	46	2 months	.....	.....	.....	Advanced bilateral *c* numerous cavities.	26–5–33
84	40	7 months	Randwick	2 months	Positive...	.....	3–9–33
85	R. 26	1 week.....	.....	.....	Positive...	Bilateral cavitation.....	15–4–31
86	34	9 months	Randwick	21 months	Positive...	Advanced bilateral	21–11–33
87	35	2 months	.....	.....	.....	Whole right lung, left upper lobe.	24–6–31
88	R. 26	2 weeks	.....	.....	.....	Extensive bilateral *c* cavitation.	23–4–31
89	R. 56	5 months	Waterfall ...	7 months	Positive...	.....	3–10–36
90	46	6 years	Randwick	Transferred	Positive...	.....	.....
91	57	?	.....	.....	Positive...	.....	.....
92	30	4½ years	.....	.....	Positive...	Positive.....	11–12–35
93	25	15 months	Randwick	Transferred	Positive...	.....	4–9–34
94	52	6 months	.....	.....	Positive...	Silicosis *c* superadded T.B.	27–10–31
95	R. 21	12 months	.....	.....	Positive...	.....	19–6–32
96	31	6 months	Waterfall ...	12 months	Positive...	? cavity right, mottling left apex.	.....
97	18	8 months	.....	.....	Positive...	.....	6–8–33
98	70	3 days	.....	.....	.....	.....	.....
99	47	5 months	Randwick	Transferred	Positive...	T.B. right upper lobe	7–10–31
100	R. 25	10 months	Randwick	14 months	Positive...	.....	18–5–33
101	58	2 months	.....	.....	.....	No records	.....
102	48	1 month	.....	.....	.....	No records	.....
103	58	1 month	.....	.....	.....	No records	.....
104	22	2 months	.....	.....	Positive...	Mottling whole both lungs...	25–6–31
105	R. 35	2 years	.....	.....	Positive...	Extensive active bilateral ...	3–6–33
106	27	4 months	.....	.....	Positive...	Extensive left, apical right, cavitation both.	9–8–33
107	45	6 months	.....	.....	Positive...	.....	7–6–32
108	50	1 month	Waterfall ...	2 months	Positive...	Very extensive left and right upper lobe *c* cavitation.	22–8–36
109	44	3 months	.....	.....	Negative	T.B. left	.....
110	62	1 week.....	.....	.....	.....	No records	.....
111	52	12 months	.....	.....	Positive...	.....	29–9–32
112	38	5 months	Exeter	Transferred	.....	Active left *c* cavitation	28–4–34
113	34	6 months	Bodington	8 months	Positive...	Advanced bilateral *c* cavitation.	.....
114	53	3 years	Randwick	Transferred	Negative	Mottling both apices	21–6–34
115	R. 44	2 months	Waterfall ...	20 months	Positive...	Active bilateral	1–8–34
116	R. 46	5 months	Waterfall ...	4 months	.....	Silicosis *c* T.B.	.....
117	R. 43	?	.....	.....	Positive...	Extensive bilateral, large cavity right.	.....
118	36	17 months	Randwick	Transferred	.....	Active bilateral	31–10–32
119	R. 35	2 months	Randwick	1 month	Positive...	T.B. right upper lobe	29–12–31
120	R. 35	4 months	Randwick	Transferred	Positive...	Active right *c* cavitation ...	6–3–32
121	57	12 months	Exeter	Transferred	Negative	Positive	.....
122	22	8 months	.....	.....	Positive...	Bilateral	.....
123	44	15 months	.....	.....	.....	Both upper lobes.....	.....
124	64	4 months	.....	.....	Negative	Healing lesion right lung ...	.....
125	39	8 months	Randwick	3 months	Positive...	Advanced right *c* numerous cavities.	12–11–32
126	26	3 months	Randwick	4½ years	Negative	Bilateral apical	.....
127	35	1 month	Randwick	Transferred	Positive...	.....	8–7–33
128	R. 23	2 months	.....	.....	Positive...	Extensive left *c* large cavity, right also involved.	12–6–36
129	24	8 months	.....	.....	Positive...	Bilateral *c* large cavity right	24–1–32
130	47	8 months	Randwick	Transferred ...	Positive...	Extensive bilateral	28–8–32
131	47	20 months	Waterfall ...	6 months	.....	Chronic *c* recent extension...	.....
132	34	15 months	.....	.....	Positive...	.....	.....
133	R. 41	1 month	Waterfall ...	4 years	Negative	Early and active right upper lobe.	.....
134	R. 26	1 week.....	.....	.....	.....	? active left infra clavic, healed foci right.	.....
135	R. 39	2 months	Randwick	1 month	Positive...	.....	.....
136	50	.....	.....	.....	.....	.....	.....

TABLE showing the after-histories of 316 male patients admitted to the Waterfall Sanatorium during 1931—*continued.*

Patient's No.	Age.	Period in Waterfall.	Further Admission to Sanatorium.	Period between Discharge and Re-admission.	Sputum.	X-Ray.	Died.
137	20	4 months	Exeter	Transferred	Positive...	Extensive left *c* cavitation...	4–6–33
138	39	.....	.....	.....	.....	.....	Aug. 34.
139	30	5 months	Randwick	17 months	Positive...	Bilateral mottling, cavity right upper lobe.	6–9–33
140	51	4 years	.....	.....	Positive...	.....	.....
141	45	5 months	.....	.....	.....	.....	5–11–31
142	17	3 months	Waterfall ...	3 years	Positive...	Increased markings right *c* cavitation.	10–11–35
143	R. 53	6 months	Randwick	Transferred	.....	Mottling right, recent extension left.	31–1–32
144	21	16 months	Exeter	Transferred	Positive...	Right apical	16–11–36
145	52	3 months	Randwick	14 months	Positive...	.....	1–4–34
146	50	10 months	Randwick	3 months	Positive...	.....	6–2–33
147	49	5 months	Waterfall ...	2 years	Positive...	Positive.....	28–3–34
148	R. 33	10 months	Randwick	2 years	Positive...	Chronic left *c* well marked cavitation.	.....
149	R. 22	11 months	Waterfall ...	6 months	Positive...	Extensive right *c* large cavity	24–5–34
150	R. 45	2 years	.....	.....	Negative	Very extensive left, fairly extensive right.	19–9–33
151	27	2 weeks	.....	.....	.....	.....	.....
152	R. 50	7 months	Randwick	Transferred	.....	Fibrosis both apices	.....
153	R. 26	4 months	Exeter	Transferred	Positive...	Irregular mottling right upper lobe.	.....
154	37	12 months	.....	.....	Positive...	Extensive bilateral	.....
155	31	7 months	Randwick ...	Transferred	Positive...	.....	25–5–32
156	R. 30	3 months	Waterfall ...	3 months	Positive...	Active bilateral apical	27–8–35
157	58	2 months	Randwick	2 months	Positive...	.....	1–12–31
158	39	10 days	Randwick	3 months	Positive...	.....	1–10–31
159	R. 26	1 week.....	.....	.....	Positive...	Positive.....	.....
160	28	2 years	.....	.....	.....	Right upper lobe and some mottling left.	29–5–33
161	59	3 years	Randwick	Transferred	Positive...	Positive.....	.....
162	R. 41	3 months	Waterfall ...	2 years	.....	.....	.....
163	49	10 months	.....	.....	Positive...	Right apex and slight left apex.	.....
164	R. 56	6 weeks	.....	.....	Positive...	Slight chronic left apex.....	.....
165	56	2 weeks	.....	.....	Positive...	.....	17–7–31
166	32	3 months	Exeter	Transferred	Positive...	Extensive bilateral long standing *c* cavitation.	8–9–34
167	67	No records	.....	.....	.....	.....	.....
168	33	14 months	.....	.....	Positive...	Fine mottling right, cavitation left.	.....
169	31	6 weeks	.....	.....	Positive...	Positive.....	30–8–31
170	R. 44	6 months	.....	.....	.....	No records	23–1–32
171	22	2 years	Waterfall ...	4 months	Positive...	.....	17–8–36
172	R. 48	1 week.....	Waterfall ...	1 year	Positive...	Extensive bilateral *c* fibrosis.	25–11–32
173	R. 45	2 months	.....	.....	.....	Advanced bilateral *c* cavitation and fibrosis.	Killed at work, 1933.
174	61	2 months	Randwick	Transferred	Positive...	.....	16–7–32
175	31	2 months	.....	.....	.....	No records	24–9–31
176	R. 50	2 months	.....	.....	Negative	Extensive active bilateral *c* cavitation.	16–9–31
177	53	5 months	.....	.....	Negative	Extensive mottling upper half both.	9–10–35
178	30	.....	Bodington	.....	.....	.....	Oct., 1934
179	43	14 months	.....	.....	Positive...	Fibrosis and mottling left...	8–1–36
180	20	8 months	.....	.....	Positive...	Bilateral mottling, old and new.	.....
181	47	12 months	.....	.....	Positive...	Extensive silicosis *c* T.B. ...	.....
182	31	.....	.....	.....	Positive...	.....	.....
183	R. 50	.....	.....	.....	Positive...	Old fibroid whole left	1–11–35
184	42	7 months	Exeter	Transferred	Positive...	Marked mottling whole right and left upper lobe.	21–8–36
185	43	.....	.....	.....	.....	.....	.....
186	R. 35	2 months	Bodington	1 week.....	Positive...	Active left	18–8–33
187	51	5 months	Randwick	Transferred	Negative	Pleural effusion left, slight scars both apices.	.....
188	R. 57	2 years	Waterfall ...	1 month	Positive...	Active left upper, and right sub-apical *c* cavitation.	8–9–33
189	31	3 months	Waterfall ...	4 months	Positive...	.....	3–9–32
190	53	5 months	Waterfall ...	8 months	Positive...	Old lesion left upper, well marked chronic right upper.	.....
191	52	6 months	.....	.....	Positive...	Extensive bilateral mottling	9–2–32
192	40	10 months	.....	.....	Positive...	Generalised mottling, cavity right apex.	.....
193	35	1 month	Bodington	12 months	Positive...	.....	18–9–34
194	35	4 months	.....	.....	Positive...	.....	23–12–31
195	21	6 months	.....	.....	Positive...	Extensive bilateral mottling *c* cavitation.	3–9–36
196	40	6 months	Bodington	1 week.....	Positive...	Extensive bilateral mottling, miliary in type.	12–6–32
197	31	1 month	.....	.....	Positive...	Extensive bilateral, chronic and fibrotic.	18–9–31

TABLE showing the after-histories of 316 male patients admitted to the Waterfall Sanatorium during 1931—*continued.*

Patient's No.	Age.	Period in Waterfall.	Further Admission to Sanatorium.	Period between Discharge and Re-admission.	Sputum.	X-Ray.	Died.
198	20	9 months	.....	.....	Positive...	.....	17–5–32
199	R. 40	3 months	.....	.....	Positive...	Positive.....	7–11–31
200	46	8 months	Randwick	2½ years	Positive...	Scattered mottling both.....	9–12–34
201	56	6 months	.....	.....	Negative	Cavitation both apices	.....
202	R. 52	1 month	Waterfall ...	18 months	Positive...	Marked mottling right lung and left apex.	20–12–33
203	43	2 months	.....	.....	Positive...	Extensive mottling entire right and upper left.	.....
204	42	15 months	Randwick	13 months	Positive...	.....	30–3–34
205	60	8 months	Randwick	13 months	.....	Advanced right, well established recent left.	19–7–33
206	26	16 months	.....	.....	Positive...	Long standing left, early right.	.....
207	26	10 months	.....	.....	Positive...	.....	5–7–32
208	R. 17	1 month	Exeter	Transferred	.....	Both upper lobes.....	.....
209	R. 61	2 months	Waterfall ...	6 months	Positive...	Healed both apices	.....
210	28	4 months	.....	.....	Positive...	Active bilateral *c* cavitation	26–2–32
211	45	5 months	Randwick	8 months	Positive...	Extensive bilateral *c* large cavity left apex.	11–11–32
212	R. 37	7 months	Randwick	3 months	Positive...	Chronic bilateral	13–7–32
213	21	4 months	Exeter	Transferred	Positive...	Well marked mottling upper half left *c* cavitation.	19–12–33
214	36	7 months	.....	.....	.....	Extensive mottling upper half both *c* cavitation.	.....
215	R. 43	15 months	.....	.....	Negative	Calcified nodules apices	.....
216	R. 54	3 years	.....	.....	.....	Extensive old bilateral, much fibrosis.	.....
217	41	1 month	.....	.....	Negative	Whole right *c* apical cavitation.	.....
218	17	3 months	Randwick	3 years	Positive...	.....	25–5–35
219	41	9 months	Exeter	Transferred	Positive...	.....	.....
220	50	3 months	Waterfall ...	6 months	.....	No records	.....
221	R. 28	10 months	.....	.....	Positive...	Old fibroid left upper lobe *c* cavitation, sub-acute right.	.....
222	34	1 month	.....	.....	Positive...	Extensive old left, more recent massive right.	23–10–31
223	R. 24	3 months	Waterfall ...	4 years	Positive...	Extensive bilateral mottling	2–3–36
224	45	1 month	.....	.....	Positive...	.....	.....
225	47	5 months	.....	.....	Positive...	Extensive bilateral apical...	.....
226	R. 49	6 months	Waterfall ...	3 years	.....	Fibrosis right interlobar region.	.....
227	51	1 month	.....	.....	Positive...	Fibroid phthisis *c* cavitation	.....
228	23	.....	.....	.....	Positive...	Positive.....	.....
229	45	2 months	.....	.....	Negative	Very chronic upper half right *c* cavitation.	.....
230	63	3 weeks	Randwick	Transferred	Negative	Bilateral	6–1–33
231	58	5 years	.....	.....	.....	No records	.....
232	23	8 months	Randwick	Transferred	Positive...	Extensive bilateral mottling *c* cavitation.	.....
233	39	2 months	.....	.....	Negative	Extensive mottling both *c* small cavities.	4–12–31
234	55	6 months	Randwick	Transferred	Negative	Extensive right *c* cavitation, small focus left apex.	16–3–33
235	24	8 months	.....	.....	Negative	? Early right upper lobe ...	.....
236	41	10 months	.....	.....	Positive...	.....	1–8–32
237	22	7 months	.....	.....	Positive...	Extensive both upper lobes, chronic left.	.....
238	57	2 months	.....	.....	Positive ..	Very extensive bilateral *c* marked cavitation.	.....
239	R. 66	18 months	Randwick	17 months	Positive...	.....	26–5–36
240	R. 66	3 months	.....	.....	Positive...	Extensive scar tissue above right hilum.	13–1–32
241	64	2 months	.....	.....	Positive...	Bilateral *c* thick walled cavity right mid lobe.	9–12–31
242	38	2½ years	.....	.....	Positive...	Positive.....	9–3–34
243	26	3½ years	.....	.....	.....	.....	.....
244	27	6 months	.....	.....	Positive...	.....	22–4–32
245	44	2 months	Waterfall ...	2 years	Positive...	Consolidation both apices ...	23–5–34
246	36	1 week.....	.....	.....	.....	Evidence of a pulmonary lesion.	.....
247	12	2½ years	.....	.....	.....	Well marked mottled right upper lobe *c* cavitation.	.....
248	17	11 months	.....	.....	.....	Extensive bilateral mottling *c* cavitation.	3–2–33
249	19	5 months.....	Randwick	8 months	.....	Active bilateral mottling ...	13–11–32
250	38	6 months	.....	.....	.....	Extensive bilateral *c* cavitation.	.....
251	R. 25	2¾ years	Randwick	8 months	Positive...	Bilateral exudative	26–3–34
252	28	3 months	.....	.....	Positive...	Positive.....	6–1–32
253	R. 59	6 months	Exeter	Transferred	Positive...	Active right upper lobe	.....
254	30	3 months	.....	.....	Positive...	Chronic both apices, left pleural effusion.	.....
255	R. 27	4 months	Exeter	Transferred	Positive...	.....	.....
256	35	2 months	.....	.....	.....	.....	15–12–31
257	R. 57	3 months	.....	.....	Positive...	.....	6–2–32

TABLE showing the after-histories of 316 male patients admitted to the Waterfall Sanatorium during 1931—*continued.*

Patient's No.	Age.	Period in Waterfall.	Further Admission to Sanatorium.	Period between Discharge and Re-admission.	Sputum.	X-Ray.	Died.
258	27	11 months	.....	.....	.....	Extensive chronic bilateral mottling.	19–10–32
259	26	14 months	Exeter	Transferred	Positive...	Advanced chronic whole left and upper half right.	.....
260	25	2 months	.....	.....	.....	Very extensive bilateral c cavitation.	27–1–32
261	27	12 months	Waterfall ...	7 months	.....	"Suspective of T.B."	.....
262	44	2 years	Waterfall ...	1 year	.....	.....	9–11–35
263	64	9 months	.....	.....	Positive...	Positive.....	.....
264	56	15 months	Randwick	8 months	.....	Extensive left c fibrosis and cavitation, recent right.	24–11–33
265	R. 32	16 months	Randwick	7 months	Positive...	Fibroid upper lobes c pneumothorax each apex.	16–11–33
266	28	4 months	.....	.....	Positive...	Extensive bilateral	.....
267	66	12 months	.....	.....	Positive...	.....	.....
268	58	6 months	.....	.....	Positive...	.....	.....
269	19	4 days	.....	.....	Positive...	Fairly extensive right, bilateral calcification.	1935
270	51	10 days	.....	.....	Negative	Mottling suggests pneumonia.	.....
271	35	3 months	.....	.....	Positive...	Bilateral	.....
272	49	16 months	Randwick	2¾ years	Positive...	.....	.....
273	R. 43	5 months	Randwick	19 months	Positive...	Bilateral apical c cavitation	.....
274	61	9 months	.....	.....	Positive...	Extensive mottling upper half left.	7–8–32
275	34	4 months	Exeter	Transferred	Negative	Positive.....	.....
276	R. 44	6 months	Randwick	Transferred	Positive...	Well established bilateral ...	23–7–32
277	40	15 months	Randwick	1½ years	Positive...	Left apex old and recent ...	22–8–35
278	58	8½ months	.....	.....	.....	.....	7–8–32
279	R. 40	16 months	Randwick	Transferred	Positive...	.....	10–2–34
280	28	13 months	Randwick	Transferred	Positive...	.....	28–2–33
281	R. 45	3 months	Randwick	7 months	Positive...	Chronic left sub-apex	23–9–32
282	58	1 month	.....	.....	.....	Advanced bilateral	28–12–31
283	51	.....	.....	.....	Negative	Old chronic c fresh bilateral infection.	.....
284	32	.....	.....	.....	Positive...	Extensive generalised bilateral c cavitation.	15–10–35
285	R. 31	10 months	Exeter	Transferred	Negative	Bilateral apical	.....
286	R. 41	.....	.....	.....	Positive...	Bilateral mottling	.....
287	R. 36	.....	.....	.....	.....	No records	24–8–35
288	R. 30	4 months	Randwick	Transferred	Positive...	Extensive bilateral c cavitation.	24–4–32
289	8	13 months	.....	.....	.....	Old calcified nodules and increased hilar shadows.	.....
290	49	16 months	Waterfall ...	6 months	Positive...	Advanced upper half left ...	.....
291	41	5 months	.....	.....	Positive...	Mottling and pleural thick left apex.	5–3–35
292	33	7 weeks	.....	.....	.....	Extensive bilateral recent and active.	26–1–32
293	37	2 months	.....	.....	.....	.....	31–1–32
294	22	13 months	.....	.....	Positive...	.....	.....
295	35	2 years	.....	.....	.....	Extensive infiltration lower right lobe.	26–12–33
296	66	2 months	.....	.....	Positive...	.....	.....
297	23	10 months	.....	.....	Positive...	Positive.....	25–4–33
298	R. 26	6 weeks	Randwick	4 months	Positive...	Very extensive bilateral c cavitation.	6–2–33
299	33	11 months	.....	.....	Positive...	Consol right upper, mottling left upper.	21–11–32
300	31	11 months	.....	.....	Positive...	Positive.....	4–11–32
301	44	1 month	Waterfall ...	1 week	.....	Extensive chronic bilateral c cavitation.	18–9–32
302	R. 50	8 months	.....	.....	Positive...	Cavitation right	1–7–32
303	40	10 months	Exeter	Transferred	Positive...	Extensive active bilateral, cavity left.	3–7–33
304	42	6 months	.....	.....	.....	Marked cavitation left apex	2–6–32
305	R. 37	3 months	Randwick	Transferred	Positive...	.....	7–6–32
306	56	3 years	Waterfall ...	2 years.....	Positive...	.....	.....
307	29	13 months	.....	.....	Negative	Bilateral c cavitation	16–1–33
308	59	6 weeks	.....	.....	Positive...	.....	6–2–32
309	26	3 months	Malahide ...	9 months	Positive...	Bilateral c cavitation	4–5–33
310	32	2½ years	Exeter	Transferred	Positive...	Consolidation right upper lobe.	.....
311	52	11 months	.....	.....	Positive...	Bilateral	2–11–32
312	61	7 months	Waterfall ...	16 months	Negative	Very chronic bilateral	.....
313	R. 64	2 weeks	Randwick	17 months	Positive...	Extensive bilateral c cavitation right.	25–6–33
314	46	4 months	Waterfall ...	3½ years	Positive...	Old left c large cavity, recent right.	.....
315	46	9 months	Exeter	Transferred	Positive...	Whole right, left apex and lower lobe.	31–3–33
316	35	10 weeks	.....	.....	.....	.....	.....

SUMMARY (Male Patients, Waterfall).

Admitted in 1931	316

ANALYSIS of Deaths.

Died in 1931	43
Died in 1932	58
Died in 1933	41
Died in 1934	20
Died in 1935	15
Died in 1936	11
	188 or 59·49 per cent.
Readmitted to Sanatoria	143

Case 173 (killed at work, 1933) has not been included in the deaths of Tuberculosis patients.

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Admission to Waterfall Sanatorium During 1931—Females.

Patient's No.	Age.	Period in Waterfall.	Further Admission to Sanatorium.	Period between Discharge and Re-admission.	Sputum.	X-Ray.	Died.
1	R. 31	2 months	Waterfall	12 months	.....	No records	.....
2	24	12 months	Waterfall	10 months	Positive	Bilateral apical	.....
3	R. 20	3 months	.....	.....	Positive	Extensive active bilateral	18–5–31
4	28	4 months	.....	.....	Positive	Small pneumothorax right base.	.....
5	54	6 months	.....	.....	Negative	Bilateral *c* fibrosis	20–7–31
6	26	3 months	Randwick	Transferred	.....	Mottling left lung	29–5–31
7	R. 22	2 months	.....	.....	Positive	Early active right	.....
8	29	8 months	Randwick	7 months	Positive	More suggestive lung abscess than T.B.	.....
9	26	4 days	.....	.....	.....	.....	.....
10	29	5 months	Malahide	Transferred	Positive	.....	22–8–31
11	57	6 months	Randwick	Transferred	Positive	.....	.....
12	44	8 months	Waterfall	2 months	.....	Fairly extensive chronic right, slight left upper.	27–9–32
13	36	11 months	.....	.....	Positive	Recent mottling right apex and left upper third.	19–12–31
14	R. 24	3 months	Waterfall	2 years	Positive	Early active right	21–10–33
15	R. 36	1 month	.....	.....	.....	No records	8–2–31
16	R. 21	1 day	.....	.....	Positive	Active right apex	2–12–31
17	R. 31	6 months	Randwick	Transferred	.....	No records	6–11–31
18	42	10 months	.....	.....	Positive	Mottling and cavitation left	16–5–34
19	32	7 months	.....	.....	Negative	Old and recent right *c* cavitation, slight left apex.	.....
20	21	3 weeks	.....	.....	.....	No records	.....
21	R. 22	4 months	.....	.....	Positive	Very extensive mottling upper half both.	.....
22	R. 45	15 months	.....	.....	Positive	Extensive right, old left apex	.....
23	R. 40	7 months	.....	.....	Positive	.....	.....
24	30	3 months	.....	.....	.....	Very extensive bilateral mottling.	11–5–31
25	23	7 months	.....	.....	Positive	.....	.....
26	41	3 months	.....	.....	Positive	Consolidation both, cavity right.	27–5–31
27	71	2 months	Randwick	Transferred	Positive	.....	15–7–34
28	33	3 months	.....	.....	Positive	Advanced bilateral	6–9–32
29	18	1 month	.....	.....	.....	Typical of early T.B.	.....
30	37	10 days	.....	.....	Positive	.....	13–3–32
31	18	2 months	.....	.....	Positive	Cavitation, fibrosis and mottling.	12–12–31
32	22	2 weeks	.....	.....	.....	Bilateral	2–5–33
33	37	3 months	.....	.....	Positive	.....	21–7–36
34	16	2 weeks	.....	.....	Positive	Fibroid *c* cavitation right apex.	12–4–33
35	R. 22	4 months	Waterfall	4 months	Positive	Fairly extensive both upper lobes *c* cavitation.	20–2–35
36	R. 30	3 months	Randwick	Transferred	Positive	Positive	14–6–31
37	R. 21	4 days	.....	.....	Positive	Bilateral mottling	21–3–32
38	20	1 day	.....	.....	Positive	Advanced active bilateral *c* cavitation.	24–4–32
39	25	9 months	Waterfall	4 months	Positive	Marked bilateral mottling	13–12–33
40	28	3 months	Waterfall	1 month	Positive	Whole left involved	.....
41	30	12 months	Waterfall	4 months	Positive	Bilateral	.....
42	R. 21	2 years	Waterfall	2 years	Positive	.....	.....
43	R. 30	5 months	Randwick	3 months	Positive	.....	4–7–32
44	21	2 months	.....	.....	.....	Bilateral	24–5–31
45	30	5 months	Randwick	17 months	Positive	Extensive bilateral *c* cavitation.	14–11–35
46	18	4 months	Waterfall	16 months	Positive	Advanced left *c* cavitation	8–11–33
47	R. 43	4½ years	.....	.....	Negative	Positive	.....
48	16	18 months	Randwick	Transferred	.....	Active right apex *c* cavitation.	22–1–35
49	36	8 months	.....	.....	Positive	.....	31–12–31
50	R. 18	8 months	.....	.....	Positive	Positive	18–12–31
51	31	21 months	.....	.....	.....	Upper half left *c* cavitation	.....
52	16	4 months	Waterfall	2 years	.....	Active left apex	.....
53	17	11 months	Waterfall	6 months	Positive	.....	20–8–33
54	R. 30	9 months	.....	.....	Positive	Advanced chronic left upper lobe and right apex.	.....
55	33	5 days	.....	.....	Positive	Bilateral apical	26–4–31
56	30	11 months	Randwick	2 weeks	Positive	Extensive bilateral *c* cavitation.	1–5–33
57	43	4 months	.....	.....	.....	Acute active bilateral	.....
58	17	11 months	.....	.....	Positive	Bilateral active, apical and sub-apical.	.....
59	30	10 months	.....	.....	.....	Bilateral apical mottling	.....
60	43	1 month	.....	.....	.....	Active bilateral	2–7–36
61	29	6 months	.....	.....	.....	Active bilateral	.....
62	23	3 months	.....	.....	Negative	? gross bilateral	20–5–36
63	41	3 months	.....	.....	Positive	Extensive left	7–8–32
64	R. 38	1 month	Randwick	Transferred	Positive	Bilateral infiltration	5–10–31
65	46	1 month	Randwick	Transferred	Positive	Apical mottling	23–1–32
66	21	10 months	.....	.....	.....	Positive	12–7–32
67	26	5 months	.....	.....	Positive	Extensive active mottling lower ⅔ left *c* cavitation.	15–10–31
68	26	19 months	Randwick	5 months	Positive	.....	19–2–36
69	64	2 weeks	.....	.....	Negative	Upper ⅔ right	.....

Admissions to Waterfall Sanatorium During 1931—Females—*continued.*

Patient's No.	Age.	Period in Waterfall.	Further Admission to Sanatorium.	Period between Discharge and Re-admission.	Sputum.	X-Ray.	Died.
70	75	2 years 10 months	.....	.....	Positive...	.....	.....
71	21	2 months	.....	.....	Positive...	Both lobes left—active.....	.....
72	10	2¾ years	.....	.....	.....	.....	25–10–36
73	37	3 months	.....	.....	.....	Extensive chronic bilateral *c* cavitation right.	14–9–32
74	53	6 months	Randwick	6 months	.....	Advanced chronic whole right, and mid one-third left.	1–8–32
75	14	2 years	.....	.....	Positive...	Infiltration right upper lobe	.....
76	33	1 month	.....	.....	Positive...	Advanced, whole right	21–8–31
77	R. 26	7 months	.....	.....	Positive...	Very extensive bilateral mottling *c* cavitation.	31–1–32
78	R. 21	6 months	.....	.....	Positive...	Advanced and extensive bilateral.	.....
79	R. 28	1 month	Randwick	Transferred	Positive...	Extensive mottling whole right and lower two-thirds left *c* cavitation.	15–12–31
80	R. 20	2 years	Randwick	13 months	Positive...	Increased mottling right ...	15–7–36
81	27	2 months	Waterfall ...	17 months	.....	Well marked right upper lobe *c* cavitation, also left.	20–6–33
82	25	3 months	.....	.....	Positive...	Fairly extensive bilateral ...	.....
83	R. 36	4 months	Waterfall ...	21 months	Negative	Right upper lobe, left apex and left base.	.....
84	54	4 months	.....	.....	Positive...	.....	18–10–31
85	24	7 months	.....	.....	Positive...	Extensive bilateral *c* cavitation at apices.	9–5–36
86	36	6 months	Waterfall ...	2 months	Positive...	Old left, small focus right upper.	2–5–32
87	22	5 months	.....	.....	.....	Mottling left side suggests T.B.	.....
88	28	7 months	.....	.....	Positive...	Very chronic right *c* large cavity, slight left apex.	.....
89	32	3 months	.....	.....	Positive...	.....	8–10–31
90	29	1 month	.....	.....	Positive...	Extensive bilateral mottling	18–3–32
91	24	11 months	Randwick	1 month	.....	Extensive right *c* cavitation	13–12–32
92	32	5 months	.....	.....	Positive...	Bilateral	24–1–32
93	28	4 months	Waterfall ...	4½ years	Positive...	Bilateral, cavitation left ...	.....
94	37	4 months	.....	.....	Positive...	Consolidation right infra clavicular.	20–2–33
95	33	5 months	.....	.....	.....	Extensive bilateral mottling, areas pneumothorax.	21–1–32
96	28	2 weeks	Waterfall ...	1 month	Positive...	Chronic bilateral *c* cavitation	15–11–31
97	17	8 months	Waterfall ...	4 months	Positive...	.....	13–6–35
98	51	4 years	.....	.....	Positive...	Cavitation both upper lobes	.....
99	28	8 months	.....	.....	.....	Fairly extensive bilateral ...	.....
100	R. 23	4 months	Randwick	12 months	.....	Old fibrosis right, active mottling left sub-apical.	24–12–32
101	R. 24	1 month	Randwick	7 months	Positive...	Bilateral	23–7–32
102	42	1 month	.....	.....	.....	Extensive left *c* cavitation, early right.	22–12–32
103	24	9 months	.....	.....	Positive...	.....	.....
104	R. 33	8 months	.....	.....	Positive...	Extensive bilateral mottling *c* cavitation right.	25–5–32
105	24	1 month	.....	.....	Positive...	.....	22–11–31
106	32	2 months	.....	.....	.....	Extensive right, early left ...	19–9–31
107	R. 35	4 months	.....	.....	Positive...	.....	9–1–32
108	R. 28	3 months	.....	.....	Positive...	Well marked active bilateral *c* cavitation.	.....
109	22	6 months	.....	.....	Positive...	Advanced chronic bilateral, cavitation left.	.....
110	51	3 months	Randwick	10 months	Negative	Active left apex	16–3–33
111	39	2 months	.....	.....	.....	No records	25–11–31
112	17	Died on admission	.....	.....	Positive...	Advanced whole left and upper half right.	29–9–31
113	23	6 months	.....	.....	.....	Very extensive right, recent and active left.	24–10–32
114	19	4 months	.....	.....	.....	Extensive bilateral *c* cavitation left sub-apical.	.....
115	26	3 months	.....	.....	Positive...	Increased bilateral mottling	27–1–32
116	42	16 months	.....	.....	.....	Very extensive bilateral *c* extensive cavitation.	24–7–36
117	18	6 months	.....	.....	Positive...	Extensive active bilateral *c* cavitation.	7–5–32
118	R. 39	5 months	Randwick	2 months	Positive...	Extensive active left, slight old right.	18–7–32
119	22	12 months	Randwick	Transferred	Positive...	.....	11–2–34
120	44	2 months	.....	.....	Positive...	Collapse upper right, middle right active.	21–11–33
121	34	3 months	.....	.....	Positive...	Extensive bilateral *c* cavitation.	.....
122	36	3 months	.....	.....	.....	Whole right *c* large cavity...	29–8–32
123	43	10 months	.....	.....	Positive...	.....	5–8–32
124	R. 35	6 months	Waterfall ...	2½ years	Positive...	Both apices heavily mottled	.....
125	32	6 months	.....	.....	Positive...	Extensive bilateral mottling *c* large cavity right.	21–2–34
126	74	8 months	Randwick	Transferred	Positive...	.....	16–7–32
127	66	8 months	.....	.....	Positive...	Positive.....	30–6–33

Admissions to Waterfall Sanatorium durirg 1931—Females—*continued.*

Patient's No.	Age.	Period in Waterfall.	Further Admission to Sanatorium.	Period between Discharge and Re-admission.	Sputum.	X-Ray.	Died.
128	39	5 months	Randwick	2 months	Positive...	Chronie bilateral	5–1–33
129	45	6 months	Randwiek	5 months	Positive...	Aeute	7–4–33
130	24	5 months	.....	.....	Positive...	Extensive mottling right, early infiltration left.	.....
131	15	9 months	.....	.....	Positive...	.....	.....
132	20	1 month	.....	.....	Positive...	.....	20–10–32
133	33	11 months	.....	.....	.....	Bilateral mottling *c* small eavities left upper.	5–2–33
134	54	3 months	.....	.....	.....	Chronie lesion above left hilum.	.....
135	R. 20	4 months	.....	.....	Positive...	Upper lobe left and apex right.	10–3–33
136	19	12 months	.....	.....	Positive...	Very extensive left, right definitely involved.	17–6–34
137	5	17 months	.....	.....	.....	No reeords	.....
138	R. 33	1 week.....	Waterfall ...	2 years	.....	Extensive mottling whole right and upper half left.	9–9–34
139	22	9 months	.....	.....	.....	Extensive bilateral *c* eavitation.	14–9–32
140	40	7 weeks	Randwiek	13 months	.....	Well marked ehronie left apieal and sub-apieal.	.....
141	24	6 weeks	Randwick	5 months	.....	Left lung involved	27–10–32
142	46	7 months	.....	.....	.....	Early left apex	.....
143	21	3 months	.....	.....	.....	Extensive long standing right *c* eavitation.	.....
144	17	18 months	.....	.....	.....	Bilateral	.....
145	R. 25	4 months	.....	.....	Positive...	.....	31–7–32
146	41	4 months	.....	.....	Positive...	Aetive left apex	.....
147	7	1 month	.....	.....	Negative	T.B. lesion left sub-apieal...	.....
148	38	6 months	Randwick	Transferred	Positive...	Right apex	8–7–32
149	21	9 months	.....	.....	Negative	Extensive bilateral	.....
150	26	5 days	.....	.....	Positive...	Fibroid type *c* eavitation left, ehronie right apex.	.....
151	23	7 days	Waterfall ...	4 years	.....	No reeords	.....
152	45	13 months	.....	.....	Positive...	Advaneed bilateral	30–1–33
153	R. 53	21 months	Waterfall ...	17 months	.....	Opaeity whole left suggests fluid.	.....
154	31	7 months	Waterfall ...	5 months	Positive...	Extensive *c* eavitation right, left apieal *c* eavitation.	3–2–36

SUMMARY (Female Patients, Waterfall).

Admitted in 1931	154

ANALYSIS of Deaths.

Died in 1931	27
Died in 1932	34
Died in 1933	17
Died in 1934	6
Died in 1936	9
	97, or 62·9 per cent.
Readmitted to Sanatoria	51

Patients Admitted during 1931 to the Queen Victoria Sanatorium, Wentworth Falls.

Patient's No.	Age.	Period in Wentworth Falls.	Further Admission.	Time between Discharge from Queen Victoria and Re-admission.	Sputum.	X-Ray.	Died.
1	39	6 months	Bodington	Within 1 week	Negative	Active bilateral	.....
2	46	12 months	.....	.....	Positive...	Catarrhal changes	.....
3	22	2 months	.....	.....	Positive...	Mottling both apices	25–9–32
4	33	9 months	.....	.....	Positive...	Cavitation left, slight chronic right.	.....
5	40	6 months	.....	.....	Negative	Extensive bilateral mottling	.....
6	23	14 months	.....	.....	Positive...	T.B. right lung	.....
7	54	1 month	Randwick	14 months	Positive...	T.B. upper half left	25–6–32
8	18	1 month	.....	.....	Nil	Bilateral apical	.....
9	42	3 months	.....	.....	Positive...	Bilateral fibroid type T.B....	23–10–32
10	39	10 months	.....	.....	Positive...	T.B. both upper lobes	.....
11	46	14 months	.....	.....	Negative	Slight, fairly chronic right sub apical.	.....
12	35	5 months	.....	.....	Positive...	T.B. left apex	.....
13	35	21 months	.....	.....	.....	Positive T.B.	.....
14	54	7 months	Waterfall ...	1 month	Positive...	Cavitation left apex	29–3–33
15	23	11 months	.....	.....	Positive...	Active right upper lobe	.....
16	47	18 months	Exeter	.....	Positive...	Fibrotic right, slight involvement left.	.....
17	26	13 months	Waterfall ...	18 months	Positive...	Chronic upper half right *c* cavitation.	5–3–36
18	21	10 months	.....	.....	Positive...	Right upper lobe and left hilar region.	.....
19	20	10 months	Wentworth Falls.	3 years	Nil	Extensive bilateral mottling *c* cavitation right.	.....
20	40	8 months	Randwick	.....	.....	Extensive right	8–6–32
21	24	9 months	.....	.....	.....	Well marked both upper lobes.	.....
22	28	7 months	Bodington	9 months	Positive...	Marked mottling upper half right, slight left apex.	.....
23	20	13 months	Bodington...	3½ years	Negative	Increased marking right upper left.	.....
24	36	2 months	.....	....	Positive...	Positive.....	1–4–33
25	34	16 months	.....	.....	Negative	T.B. both upper lobes	.....
26	36	9 months	.....	.....	Positive...	Bilateral T.B.	6–10–34
27	58	5 months	.....	.....	Positive...	.....	.....
28	45	5 months	.....	.....	Positive...	Chronic bilateral	.....
29	46	5 months	.....	.....	Nil	Bilateral apical	.....
30	31	8 months	.....	.....	Positive...	Fairly extensive bilateral *c* cavitation.	.....
31	38	4 months	.....	.....	Positive...	Chronic upper half both *c* cavitation.	23–6–34
32	32	7 months	.....	.....	Negative	Extensive bilateral upper lobe mottling.	.....
33	41	13 months	.....	.....	Positive...	Very extensive old T.B. *c* well marked cavitation.	.....
34	21	2 months	.....	.....	Positive...	.....	8–10–32
35	25	2 years	.....	.....	Positive...	.....	.....
36	42	3 months	Wentworth Falls.	4 months	Positive...	Bilateral fibroid type	23–10–32
37	20	18 months	.....	.....	Positive...	Right upper lobe *c* slight cavitation.	.....
38	32	2 months	.....	.....	Positive...	Old fibroid *c* cavitation	4–8–34
39	19	10 months	.....	.....	.....	Early T.B., mainly right side	.....
40	27	4 months	.....	.....	Positive...	Bilateral apical	2–9–32
41	19	6 months	.....	.....	.....	.....	.....
42	28	7 months	Waterfall ...	2 years	.....	.....	22–12–34
43	19	11 months	.....	.....	.....	Early subclavic infiltration	.....
44	29	4 months	.....	.....	Nil	Mottling left upper lobe ...	.....
45	27	10 months	.....	.....	Positive...	Extensive bilateral mottling *c* cavitation.	29–7–35
46	29	9 months	.....	.....	Positive...	T.B. upper one-third both *c* cavitation.	.....
47	40	6 months	.....	.....	Positive...	Cavity right apex, recent spread lower lobe.	23–1–36

Summary (Patients Queen Victoria Sanatorium, Wentworth Falls).

Admissions in 1931	47
Deaths in five years	16, or 34 per cent.

Analysis of Deaths.

Died in 1931	
Died in 1932	7
Died in 1933	2
Died in 1934	4
Died in 1935	1
Died in 1936	2
	16

Average period in Sanatorium—8½ months.
Eleven patients sought re-admission to Sanatoria.

Patients Admitted During 1931 to the Queen Victoria Sanatorium at Thirlmere.

Patient's No.	Age.	Period in Thirlmere.	Further Admission.	Time between Discharge from Queen Victoria and Admission.	Sputum.	X-Ray.	Died.
1	35	15 months	Waterfall ...	1 month	Positive...	T.B.	.....
2	45	12 months	.....	.....	.....	T.B. both apices *c* probable cavity right upper lobe.	.....
3	29	3 months	.....	.....	.....	Increased mottling first and second right interspace.	.....
4	22	12 months	.....	.....	.....	Old inactive T.B. both	.....
5	35	4 months	.....	.....	Negative	Well marked mottling upper half right.	12–11–31
6	27	11 months	.....	.....	.....	Active T.B. right upper lobe	.....
7	18	6 months	.....	.....	.....	Healing lesion upper half left, right clear.	.....
8	21	4 months	Randwick	Under 1 week ...	.....	Advanced bilateral *c* numerous cavities.	20–6–34
9	...	10 months	Randwick	5 months	Positive...	Mottling each apex	30–6–35
10	22	10 months	Waterfall ...	2¾ years	Positive...	Extensive T.B. right	8–9–36
11	25	2 months	.....	.....	Positive...	T.B. mottling both bases ...	1–3–36
12	24	5 months	Thirlmere	14 months	.....	Mottling left *c* cavitation. Early mottling right mid one-third.	.....
13	60	6 months	.....	.....	.....	T.B. above right hilum, left clear.	.....
14	27	4 months	Waterfall ...	2 months	.....	Well marked active bilateral, T.B. *c* cavitation.	.....
15	15	10 months	.....	.....	.....	"Think she has signs T.B. of left upper lobe."	.....
16	27	13 months	Waterfall ...	Under 1 week ...	.....	.....	.....
17	25	11 months	.....	.....	.....	Very extensive T.B. left lung *c* some cavitation.	.....
18	23	9 months	.....	.....	Positive...	Early T.B. left infra clavic region.	.....
19	18	9 months	.....	.....	Positive...	Early T.B.	.....
20	33	9 months	.....	.....	Positive...	.....	21–7–34
21	27	5 months	.....	.....	.....	Extensive mottling both upper lobes.	.....
22	25	1 month	.....	.....	.....	Extensive active T.B., right upper lobe, slight involvement left.	.....
23	20	9 months	.....	.....	.....	Extensive lesion left and upper half right.	.....
24	24	5 months	.....	.....	.....	Increased markings right apex.	.....
25	21	9 months	.....	.....	.....	Mottling each apex	.....
26	24	3 months	.....	.....	.....	Extensive chronic bilateral T.B. *c* large cavity right upper lobe.	7–10–33
27	...	3 months	.....	.....	Positive...	.....	.....
28	37	9 months	.....	.....	.....	Mottling both T.B. *c* fibrosis	27–4–36
29	28	5 months	.....	.....	Positive...	T.B. upper half both	2–3–33
30	34	7 months	.....	.....	Positive...	T.B. scar left apex	.....
31	25	9 months	.....	.....	.....	Chronic T.B. right upper lobe.	.....
32	17	12 months	.....	.....	Negative	Extensive T.B. both upper lobes, recent and active.	.....
33	34	1 month	.....	.....	Positive...	Cavitation left upper lobe, mottling right side.	.....
34	28	9 months	.....	.....	Negative	Perihilar mottling suggests T.B.	.....
35	34	10 months	.....	.....	.....	Old T.B. right upper lobe, left clear.	.....
36	38	15 months	.....	.....	Positive...	.....	.....
37	21	9 months	.....	.....	Positive...	2 small cavities *c* fibrosis left apex.	.....
38	64	6 months	.....	.....	.....	Old calcified lesion left apex	.....
39	23	9 months	.....	.....	Positive...	Fairly extensive T.B. right upper *c* cavitation.	8–8–34
40	31	1 month	.....	.....	Positive...	Fibroid T.B. right apex, probable early left mid lobe.	29–5–36
41	26	6 months	.....	.....	Positive...	Well established T.B. right upper lobe.	.....
42	29	9 months	.....	.....	Positive...	Chronic of both upper lobes *c* marked cavitation.	26–9–34
43	28	12 months	.....	.....	Positive...	Upper half left.....	.....
44	18	6 months	.....	.....	.....	Recent and active left sub apical.	.....
45	27	11 months	.....	.....	.....	Slight right sub apical, recent and active.	.....
46	38	9 months	.....	.....	Positive...	Early bilateral subclavicular infiltration.	.....
47	47	10 months	.....	.....	.....	Chronic right apex *c* cavitation, early left.	.....
48	27	7 months	Thirlmere	7 months	Positive...	Both apices	.....
49	23	7 months	.....	.....	.....	Early bilateral apical	23–7–36
50	30	6 months	.....	.....	.....	Old probably healed bilateral apical.	.....
51	26	6 months	.....	.....	Positive...	Extensive fairly chronic mottling left upper.	.....

Patients Admitted during 1931 to the Queen Victoria Sanatorium at Thirlmere—*continued.*

No.	Age.	Period in Thirlmere.	Further Admission.	Time between Discharge from Queen Victoria and Admission.	Sputum.	X-Ray.	Died.
52	18	12 months	.....	.....	.....	Well marked mottling right apical.	.....
53	22	1 month	.....	.....	Positive...	Well marked mottling left upper lobe *c* cavitation.	.....
54	46	4 months	.....	.....	Negative	Early lesion right apex	.....
55	26	9 months	.....	.....	Positive...	Small area right apex and sub apex.	.....
56	15	15 months	.....	.....	Positive...	Cavitation left apex	.....
57	29	9 months	.....	.....	Positive...	Extensive left upper lobe *c* cavitation.	5-12-33
58	22	5 months	.....	.....	Positive...	Active *c* cavitation left apex	.....
59	19	9 months	.....	.....	Negative	Fairly chronic bilateral *c* cavitation.	.....
60	48	3 months	.....	.....	Negative	Scarring both apices	.....
61	26	5 months	.....	.....	Positive...	Infiltration right apex and base, cavitation left hilar.	.....
62	23	7 months	.....	.....	Positive...	T.B. left apex, right clear ...	.....

Admitted in 1931	62
Died in 1931	1
Died in 1932	...
Died in 1933	3
Died in 1934	4
Died in 1935	1
Died in 1936	5
Total Deaths in five years	14, or 22·2 per cent.

Re-admitted to Sanatoria—8.

Average Period in Sanatorium—7½ months.

Admissions to Exeter during 1931.

Patients Number.	Age.	Period in Exeter.	Further admission to Sanatorium at—	Period between discharge from Exeter and admission.	Died.
1	27	12 months	.....	.....	.....
2	33	9 months	.....	.....	.....
3	37	10 months	Randwick	6 months	2–6–32
4	25	9 months	.....	.....	.....
5	34	12 months	.....	.....	.....
6	40	5 months	.....	.....	.....
7	21	4 months	Randwick	6 months	17–8–32
8	17	7 months	Bodington	4 months	.....
9	22	7 months	Malahide	12 months	25–5–33
10	28	8 months	.....	.....	.....
11	39	6 months	.....	.....	.....
12	20	1 month	.....	.....	4–6–33
13	30	6 months	.....	.....	.....
14	61	7 months	.....	.....	.....
15	38	10 months	Picton Lakes	1 month	28–4–34
16	16	6 months	.....	.....	.....
17	17	12 months	.....	.....	.....
18	26	6 months	.....	.....	.....
19	38	12 months	.....	.....	.....
20	19	5 months	.....	.....	.....
21	30	9 months	Bodington	16 months	2–5–36
22	31	14 months	.....	.....	8–9–34
23	32	1 month	Waterfall	4 months	18–2–33
24	26	2 months	.....	.....	.....
25	35	6 months	.....	.....	.....
26	46	6 months	Randwick	2½ years	1–3–35

Summary (Patients, Exeter).

Admitted during 1931 26
Died within five years of admission ... ... 9, or 34·6 per cent.

Analysis of Deaths.

Died in 1931 ... ...
Died in 1932 2
Died in 1933 3
Died in 1934 2
Died in 1935 1
Died in 1936 1
9

Eight, or 30·7 per cent., sought re-admission to Sanatoria :
5 in 6 months.
2 in 18 months.
1 in 2½ years.

Admissions to Bodington Red Cross Sanatorium during 1931.

Patients No.	Age.	Period in Bodington.	Further Admission to Sanatorium.	Time between Discharge and Re-admission.	Sputum.	X-Ray.	Died.
1	32	2 months	Bodington	1 month	Negative	Scattered mottling both.....	.....
2	47	13 months	.....	.....	.....	Old and active T.B. right apex.	.....
3	42	3 months	.....	.....	Positive...	Extensive bilateral *c* cavitation.	.....
4	50	3 months	.....	.....	Positive...	.....	8–10–33
5	42	16 months	Bodington	4 months	Positive...	Bilateral T.B. *c* cavitation...	.....
6	43	7 months	.....	.....	Positive...	Bilateral mottling	.....
7	41	4 months	Malahide ...	2 years	Positive...	Extensive T.B. left upper lobe.	19–8–35
8	44	10 months	.....	.....	Positive...	Old right apex *c* slight cavitation, recent spread right.	.....
9	31	2 months	.....	.....	Positive...	Marked mottling left and mottling right.	.....
10	43	1 month	Randwick	2 months	Positive...	Large areas calcification both apices.	.....
11	49	16 months	Exeter	.....	.....	X-ray positive	.....
12	41	15 months	Bodington	7 months	Positive...	.....	.....
13	35	2 months	.....	.....	Positive...	.....	10–7–36
14	34	5 months	.....	.....	Positive...	.....	.....
15	33	3 months	.....	.....	Positive...	Very extensive mottling upper half both.	.....
16	39	3 months	.....	.....	Positive...	.....	.....
17	35	11 months	Bodington	11 months	Positive...	X-ray—positive	21–11–33
18	37	13 months	.....	.....	.....	Mottling both upper lobes *c* cavitation.	.....
19	40	3 months	.....	.....	.....	Quiescent T.B. left upper, right clear.	.....
20	45	6 months	.....	.....	.....	.....	2–2–33
21	43	8 months	.....	.....	Positive...	Advanced bilateral mottling	.....
22	40	1 month	.....	.....	.....	Slight T.B. right upper lobe	.....
23	35	2 months	.....	.....	Positive...	Active mottling left upper lobe.	.....
24	43	2 months	.....	.....	Negative	Mottling left apex suggests T.B.	.....
25	39	7 months	.....	.....	Negative	Active bilateral T.B.	.....
26	53	13 months	Exeter	1 week.....	.....	Old T.B. right apex *c* fibrosis.	.....
27	43	20 months	.....	.....	Positive...	T.B. upper half both, cavity left apex.	.....
28	39	3 months	.....	.....	Positive...	Extensive bilateral	.....
29	35	5 months	.....	.....	Positive...	Extensive active right — early left.	.....
30	53	8 months	.....	.....	.....	Chronic both infra clavic regions.	.....
31	39	1 month	Bodington	17 months	Positive...	Extensive right upper $\frac{2}{3}$, and left apex.	.....
32	37	2 months	.....	.....	.....	Extensive active bilateral ...	.....
33	43	1 month	Randwick	2 years	Positive...	Right apical	13–11–34
34	35	3 months	Randwick	1 week.....	Positive...	Well marked bilateral mottling.	.....
35	45	12 months	.....	.....	.....	.....	.....
36	31	5 months	.....	.....	.....	.....	12–7–31
37	31	11 months	.....	.....	Positive...	Whole right lung	.....
38	23	26 months	Waterfall ...	1 week.....	Positive...	X-ray positive	17–11–34
39	36	5 months	Malahide ...	1 week.....	Positive...	.....	21–8–31
40	45	13 months	.....	.....	.....	Early active left apex	.....
41	54	16 months	Randwick	5 months	Positive...	Old T.B. left *c* large cavity, chronic right.	19–10–32
42	57	26 months	Bodington	4 months	Positive...	Well marked bilateral *c* fibrosis.	.....
43	24	13 months	Bodington	1 month	.....	.....	11–12–32
44	52	5 months	Bodington	1 month	Positive...	Well marked bilateral apical	.....
45	35	2 months	.....	.....	Negative	? early T.B.	.....
46	37	13 months	.....	.....	.....	Mottling both upper *c* cavitation left.	.....
47	53	1 month	.....	.....	.....	Marked mottling left and mid lobe right.	.....
48	31	13 months	.....	.....	Positive...	Cavity left upper, early right lung.	.....
49	39	13 months	.....	.....	Positive...	Calcareous nodules and fibrosis right hilum.	.....
50	39	4 months	Exeter	1 month	Positive...	Right apical	.....
51	26	5 months	.....	.....	Positive...	Chronic bilateral	.....
52	32	11 months	.....	.....	Negative	Right upper and lower lobes	.....
53	37	3 months	Waterfall ...	12 months	Positive...	Mottling both apices	4–4–34
54	26	7 months	Exeter	1 month	.....	Small cavity left, mottling both.	.....
55	68	1 month	.....	.....	Positive...	Extensive left *c* cavity.....	1–6–33
56	47	19 months	Exeter	.....	.....	Active bilateral	.....
57	21	11 months	Malahide ...	1 month	Positive...	Active bilateral apical	21–11–35
58	53	10 months	.....	.....	Negative	Chronic left	25–8–32
59	54	13 months	Randwick	18 months	Positive...	Very extensive bilateral ...	3–2–35
60	37	5 days	.....	.....	.....	.....	30–5–31
61	21	14 months	Exeter	.....	Negative	Mottling right upper, subacute.	.....
62	52	16 months	.....	.....	Negative	Old chronic right *c* cavitation.	20–8–35

Admissions to Bodington Red Cross Sanatorium during 1931—*continued.*

Patient's No.	Age.	Period in Bodington.	Further Admission to Sanatorium.	Time between Discharges and Re-admission.	Sputum.	X Ray.	Died.
63	34	11 months	Bodington	16 months	Positive...	Extensive both upper lobes *c* cavitation.	.....
64	18	12 months	.....	.....	Positive...	.....	26–6–32
65	36	21 months	.....	.....	Positive...	Sub-acute left upper lobe ...	21–4–34
66	23	9 months	.....	.....	Positive...	Mottling extreme right apex and left sub-apical.	.....
67	39	3 days	.....	.....	.....	.....	29–8–31
68	19	4 months	Bodington	22 months	Positive...	Mottling both—active and chronic.	.....
69	26	15 months	.....	.....	Positive...	Mottling right upper and mid lobes *c* cavitation.	.....
70	34	8 months	Randwick	4 years	Positive...	Old both apices, recent both lower lobes.	19–12–36
71	29	7 months	.....	.....	Positive...	Bilateral, sub-acute in type	8–4–36
72	29	5 months	.....	.....	Positive...	Extensive upper part left, small right apex.	.....
73	54	2 weeks	.....	.....	Negative	Calcified nodules left sub-apical.	.....
74	29	4 months	.....	.....	Positive...	.....	.....
75	25	4 months	.....	.....	.....	.....	.....
76	43	9 months	.....	.....	Negative	Negative. Several large haemoptyses.	.....
77	18	5 months	.....	.....	.....	.....	.....
78	28	2 months	.....	.....	.....	.....	.....
79	31	5 months	Waterfall ...	4 years	Positive...	Left apex suggests T.B.....	21–8–36
80	53	4 months	.....	.....	.....	Mottling right upper lobe...	.....
81	21	5 months	.....	.....	Negative	Well marked mottling right upper lobe, early left apex.	.....

SUMMARY (Patients Bodington Red Cross Sanatorium).

Admissions during 1931 81
Died up to 1936 ... ... 24, or 29·6 per cent.

ANALYSIS of Deaths.

Died in 1931	...	...	...	...	...	...	...	4
Died in 1932	...	...	...	...	...	...	...	4
Died in 1933	...	...	...	...	...	...	...	4
Died in 1934	...	...	...	...	...	...	...	4
Died in 1935	...	...	...	...	...	...	...	4
Died in 1936	...	...	...	...	...	...	...	4
								24

Twenty-seven sought re-admission to Sanatoria.
Nos. 1 to 35 were returned soldiers.
Nos. 36 and 67 were females.

DIVISION OF INDUSTRIAL HYGIENE.

REPORT OF THE MEDICAL OFFICER OF INDUSTRIAL HYGIENE FOR THE YEAR ENDED 31st DECEMBER, 1936.

Staff.—Medical Officer of Industrial Hygiene, Charles Badham, B.Sc., M.B., Ch.M., D.P.H.; Physicist Assistant, H. E. G. Rayner, B.Sc.; Second Assistant, A. M. Willison, B.Sc.

This Division undertakes the investigation of hazards to health in factories, mines and industry generally; the ventilation of theatres, cinemas and other places; the examination of factory children; and the diagnosis of cases of occupational disease.

Dust Diseases of the Lungs.

The work of the Medical Officer of Industrial Hygiene in the investigation into dust diseases and on the special Pneumonokoniosis Board of the Workers' Compensation Commission has continued.

A monograph dealing with the lungs of workers in various dusty occupations is published in this Report (p. 100). It is entitled "The Lungs of Coal, Metalliferous, Sandstone and Other Workers in New South Wales: Chemical Analysis and Pathology."* The summary of this monograph states—

(1) Of the seventy-six lungs dealt with in this publication, sixty-nine came from workers in various dusty occupations, and, of these, sixty-two were affected by varying degrees of pneumonokoniosis whilst seven were unaffected.

(2) Five lungs came from individuals dead of tuberculosis and having had no known dust exposure, and two from individuals not exposed to dust.

(3) Of coal-miners' lungs, there are thirty-two; metalliferous miners, eleven; sandstone workers and miners, eight; and of miners who had done both coal and metalliferous or sandstone work, thirteen; together with a small group of miscellaneous workers in dusty occupations.

(4) These lungs are described and classified following pathological examination and chemical analysis (including the separation of free and combined silica) by a classification based on pathological and chemical findings, and they have been grouped according to the industrial history, which has been carefully recorded.

(5) It is concluded from the examination of the data given that "coal dust," as distinct from a minimal amount of free and combined silica it may contain, is capable of producing the fibrotic changes seen in some coal-miners' lungs.

(6) Contrary to generally accepted opinion, it is considered that the entry of coal dust and probably other dusts into a lung already affected by pulmonary fibrosis, is small and may be negligible as a cause of increase of existing fibrosis.

(7) The disabling factor in the pulmonary fibrosis of coal-miners in New South Wales is shown to be emphysema, and it is considered that this is more often secondary to fibrosis than to bronchitis, which appears to be accepted as the incapacitating factor in European and American coal-miners.

(8) Comparison with the results of chemical analyses of lungs by various authors is made, and the ambiguity resulting from the use of the term "total silica" in different senses is stressed, and the need for some standard method of analysis emphasised.

Questionnaire on Silicosis and Tuberculosis.

The following questionnaire was recently submitted to this Division by the Government Insurance Office, which sought for an expression of opinion on "Up to what degree of disease can a workman exposed to silica continue to work under such exposure without it being dangerous to him? *Can he continue without incurring danger:*

1. When found to be suffering from silicosis alone?
2. When found to be suffering from silicosis accompanied by quiescent tuberculosis?
3. When found to be suffering from silicosis and active tuberculosis?"

The reply made by this Division to the questionnaire stated—"A single unexplained answer to the questions would only be possible if there were a definite, generally-accepted basis of knowledge of the incidence of disease in different working conditions, and the pathology, diagnosis and prognosis of silicosis.

Two questions must precede those submitted:—

1. Is the silica dust exposure to be minimal?—*i.e.*, exposure to that small amount of dust that it is possible to arrive at in all silica industries?
2. Is the silica dust exposure to be maximal?—*i.e.*, exposure to amounts of silica dust beyond that which experience shows can be attained by good working conditions?

If the conditions are those of maximal exposure, then the three questions are answered in the negative, for it is dangerous for any man to work in them—'dangerous' is a term which I define as exposure to a hazard which will materially shorten the life of the individual exposed to it. The conditions of maximal dust exposure still exist in some places and industries.

My second answers to your questions are based on the assumption that the exposure to silica dust will be minimal. When silicosis is diagnosed, resolution of the fibrosis is no longer possible and the disease will be slowly progressive, but some of the earliest cases will not advance markedly if there is no further exposure to dust. The danger of the onset of tuberculosis is, in my opinion, equally great with early or well-developed silicosis, and is not affected by remaining at or leaving employment where there is exposure to silica dust.

Tuberculosis (pulmonary) is a disease with clinical symptoms and signs of toxaemia—debility, wasting, fever, etc. For your purpose, I may only consider the question of a silicotic who has tuberculosis as defined above and, in my experience, recovery is so rare that the question of whether it is dangerous for a silicotic who has recovered from active tuberculosis to return to work would seldom arise. I would not invariably consider it dangerous for him to return to his work, and it would be more dangerous to leave him in a state of semi-privation.

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* Charles Badham and Harold Burfield Taylor, 1937, p. 99

Quiescent tuberculosis is a diagnosis that rests almost always on the opinion of some radiographers (which post-mortem examination has often refuted) that they can differentiate between the lesions of the lung caused by silica or other dust and tuberculosis. This radiographic diagnosis of quiescent tuberculosis in cases of dust diseases of the lung has no sound clinical basis, and the time has arrived when it should be abandoned.

Before interfering with the economic life of a worker, it is obvious that the medical profession should be able to show that such interference is based on something sounder that a belief that this is advisable; that such interference will prolong life, while not materially decreasing comfort and well-being, should be clearly demonstrable by recorded cases.

My interest in this problem over some years convinces me that medical knowledge has not sufficiently advanced to enable us to know what type of man will become affected by silicosis, or what advantage, if any, is gained by removing men from a silica industry with a minimal dust exposure—I believe that it is more dangerous to place a silicotic in a worse economic condition, than to leave him at work. Disability from fibrosis or tuberculosis may be dangerous to life and call for cessation of work. Medical action in other conditions appears to me unjustified by knowledge or experience. To lessen the number of men who will die from silicosis, it is essential to reduce the dust. To remove men already affected is merely to expose fresh individuals to the hazard and, as the onset of tuberculosis does not appear to depend on the amount of dust in the lungs, the incidence of tuberculosis among dust workers will be increased rather than diminished by exposing more men to the hazard. The position of silica workers is akin to that of aniline workers with bladder tumours and here those stricken are left at work and fresh industrial 'cannon-fodder' is not provided.

The questionnaire then is answered according to the degree of exposure to silica dust :—

Silicosis and Tuberculosis.—Up to what degree of disease can a workman exposed to silica continue to work under such exposure without it being dangerous to him ? *Can he continue without incurring danger ?*

	Answer :—When the dust present is—	
	Maximal.	Minimal.
1. When found to be suffering from silicosis alone ? ...	No.	Yes.
2. When found to be suffering from silicosis accompanied by quiescent tuberculosis ?	No.	Yes.
3. When found to be suffering from silicosis and active tuberculosis ?	No.	No.

Lead Poisoning.

One hundred and thirty-one (131) individuals, suspected of having lead poisoning were examined by this Division; of these, fifty-four (54) were diagnosed as having lead poisoning with disability, and the remaining seventy-seven (77) as having no disability or as not being lead poisoned. As in previous years, the majority of these individuals came from accumulator factories, a total of twenty-eight (28); other industries which furnished cases of lead poisoning being, vitreous enamelling (8), lead smelting (7), painting and paint manufacture (5), plumbing (1), potteries (1), ship breaking (1), silver mill (1), polishing (1), adventitious exposure (1).

The examination of blood smears, submitted by medical officers in charge of six factories engaged in the manufacture of accumulators and battery plates has been continued and 1,783 slides were reported on. Examinations were also made of blood slides submitted by the medical officers of two vitreous enamelling factories and in this connection reports were made on 418 slides.

At the request of this Division, the Department of Labour and Industry allotted an inspector to visit hazardous trades and enforce compliance with the Regulations. This inspection has resulted in the putting in order of exhaust fans, masks and other safety devices which had become inefficient in some factories, and has caused the installation of further protective equipment where it was deemed necessary. This has resulted in a marked reduction of the number of cases of lead poisoning during the second half of this year, but for permanent effects, this special inspection will have to be continued.

At the request of the Federated Brick, Tile and Pottery Industrial Union of Australia, an inspection was made of three potteries to investigate a complaint that employees were unduly exposed to lead and silica dusts. In one of the factories, lead glaze was being sprayed in the open shop and the sprayer had signs of lead poisoning.

The need of efficient exhaust booths during spraying in the vitreous enamelling industry was clearly demonstrated in one factory. The spray booths were poorly constructed and the average air-movement at the face of the booths was less than 30 feet per minute, and a worker spraying non-lead enamel at the booth next to the one where the lead enamel was being sprayed, had signs of a lead intake.

An interesting fact was noticed in the lead-smelting industry. There are two large lead-reclaiming concerns in Sydney and only one of these produced cases of lead poisoning, seven in all, during 1936 : the other did not cause a single case. The first factory dealt chiefly with old accumulators which were broken up and much dust was created during this and subsequent operations, whereas the second factory dealt chiefly with type metal, printers' dross and scrap lead, and only smelted battery plates on rare occasions. This factory supplied hose-masks for its employees when cleaning out the flues and bricking the furnace and also placed their men on a roster, putting them on a non-lead job as soon as they showed, by blood examination, any signs of becoming affected. The first factory dealt exclusively with lead and had no non-lead jobs on which they could place affected employees and they supplied muzzle masks for their employees.

Table showing the occupations of 131 individuals examined for lead poisoning during 1936 and the diagnosis

Industry.	Occupation.	Number examined.	Lead-poisoning with disability.	Not lead-poisoned or lead-poisoning without disability.
Printing	Hand composing	3	...	3
	Lithographic printing	1	...	1
	Stereotyping	2	...	2
	Other processes	3	...	3
Manufacture of accumulator batteries.	Pasting	6	5	1
	Mixing	5	4	1
	Assembling	4	1	3
	Burning	3	3	...
	Moulding	7	2	5
	Formation	10	5	5
	Handling dry plates	2	2	...
	Repair work	1	1	...
	Lead oxide plants	4	3	1
	Cleaning	1	...	1
	Other processes	5	2	3
Painting	Coach painting	1	1	...
	House painting	12	2	10
	Spray painting	4	...	4
	Ship painting	1	...	1
	Paint factory	1	...	1
	Lead corroding	4	2	2
Plumbing	Soldering	5	1	4
	Tinning	1	...	1
Vitreous enamelling	Mixing	1	1	...
	Spraying	7	5	2
	Dusting	1	...	1
	Racking	2	2	...
Smelting of metals	Lead	16	7	9
Pipe laying	Caulking	1	...	1
Pottery	Glazer	1	1	...
Mining	Lead mining	4	...	4
Ship-breaking	Oxy-acetylene burner	1	1	...
Leadlight	Manufacture	1	...	1
Handling lead arsenate	.....	1	...	1
Miscellaneous	Silver Mill	1	1	...
	Polishing	2	1	1
	Adventitious exposure	2	1	1
	Non-lead	4	...	4
		131	54	77

Tetraethyl Lead.

At each medical inspection by Dr. K. Fairley of the Sydney men engaged in mixing tetraethyl petrol, we have examined the blood slides taken for the presence of stippled cells. Of the 78 slides examined, 26 shewed the presence of punctate basophilia, the highest count being 2,800 per million red cells. The average number of stippled cells per slide was 180 per million red cells. No cases of lead poisoning have arisen from the use of tetraethyl lead in New South Wales.

Spray Painting.

Blood examinations were made of four spray-painters; only one showed changes which might be attributed to poisoning by lacquer thinners. His leucocyte count was 4,200 per cubic millimetre with 35 per cent. lymphocytes; one binucleated lymphocyte being seen in the blood smear. The thinners would only contain benzol as an impurity.

The medical officer of Industrial Hygiene worked on the committee convened to revise the regulations to control the spray painting of vehicles, parts thereof and other articles.

Arsenic.

A fettler who occasionally sprayed weeds with sodium arsenite was seen two months after leaving work; he had been in a hospital for a month. He complained that, after spraying, he had nausea, diarrhoea, pains in the arms, legs and thighs, "pins and needles" of legs, numbness of hands and fingers, shortness of breath and general debility. He still complained of nausea, weakness and soreness in chest and throat. He had weakness of the flexors of the hands and wrists, and a herpes-like rash of right chest above the nipple and below the axilla and scapula of the right side. There was also a patch of herpes near the left axilla. He stated that the rash had been present about nine weeks. His arsenic excretion was 0·008 mg. per litre of urine and 0·90 mg. per 100 g. of hair.

Sulphur Trioxide.

At the request of the Balmain Municipal Council, an inspection was made of a chemical works to try and minimize the escape of fumes which were said to be creating a nuisance in the municipality. It was found that the fumes were evolved from the sulphuric acid concentration plant. In this plant, the sulphuric acid from the chambers is heated in a range of quartz evaporating dishes to drive off water. Sulphur trioxide is also evolved and is removed by an exhaust, passes through a scrubber and thence to the flue and outside air. Sulphur trioxide which was not removed by the scrubbers was considered to be the cause

of the nuisance. At the time of inspection, there was a moderate breeze and the acid fumes were only noticeable in the immediate vicinity of the flue outlet, but it would be possible on still days for the fumes to descend over the surrounding district. The management stated that, when there were breakages of the silica basins, the fumes were very severe, but these breakages only occurred occasionally. The management have now installed a second scrubber and discharge the final effluent into part of their sulphuric acid plant (Chamber process).

Ventilation.

Following complaints of ill-health due to dust and fumes, an investigation was made of the conditions of work in projection boxes in cinemas. Copper coated carbons were chiefly used, and a greyish-white dust permeated the projection boxes and settled on ledges, etc. No noxious substance, however, was found in this dust. Many of the boxes were devoid of exhaust ventilation, and the opinion was formed that the complaints were due to the heat and lack of air-movement, and the presence of small amounts of carbon monoxide and nitrogen peroxide formed by the electric arc.

The examination of the ventilation of theatres, cinemas and public halls has been carried out when required by the Chief Secretary's Department, and various investigations have been made concerning the ventilation of city stores, offices and buildings generally.

Working Conditions in Factories Engaged in the Manufacture of Confectionery.

At the request of the Federated Confectioners' Association of Australia, an investigation of the conditions in four confectionery factories was undertaken. The complaints were :—

(1) That owing to air conditioning, the employees were exposed to the risk of chills and colds brought about by varying temperatures.

(2) That the health of employees working near the tapping tables was being affected by the "excessively loud hammering noise."

In regard to air-conditioning, all four factories had installed plants, similar in design, for certain purposes, and the latest installations had thermostatic control. The lowest room temperature observed was 59·5° F., but most of the rooms were kept at temperatures between 63° and 70° F. At the lower temperatures, 59°—63° F., the conditions appeared cool, but not markedly so. This opinion was based on our personal observations, *i.e.*, when doing no work and wearing normal clothing. With suitable clothing, the conditions should not have produced any discomfort to the operatives in these sections who were engaged in manual work of a light nature, such as dipping and packing. In the higher temperature rooms, the temperatures were too high for comfort, but the conditions could have been improved by the installation of rotary fans to increase the air-movement.

The differences in temperature between the various sections were not marked. In moving from room to room, the decrease or increase in temperature was noticeable, but not markedly so.

In each factory, during working hours, the exhaust air was recirculated after passing through sprays. A certain percentage of the air is lost due to various factors and "make-up" air was equal to that supplied to certain hot rooms and not exhausted back to the conditioning plant, plus the amount used in the ventilation of offices or allowed to escape by way of a bye-pass duct. In one of the factories, some of the conditioned air was lost by crevice and accidental ventilation (opening of doors, etc.) but no permanent provision was made in the plant to supply fresh air from outside. In one of the factories, carbon dioxide readings were made at frequent intervals and averaged about eight parts of CO_2 per 10,000 parts of air. This reading was within the limit allowed by the regulations, and the average air-supply per person was equal to 1,600 cubic feet per hour or about 27 cubic feet per person per minute.

With regard to the complaint of noise from the tapping tables, the opinion was formed that this could be appreciably reduced by enclosing the tables and by insulation. The matter was discussed with the works' managers, who were willing to carry out experiments to try and minimize the noise.

The following conclusions were reached :—

(1) The temperature conditions found were not apparently unreasonable for the processes carried on, and were not likely to affect the health of operators.

(2) The complaint regarding noise from tapping tables seemed justified and received attention with a view of minimizing it.

Air Sampling at a Galvanizing Works, Newcastle.

A Galvanizing Works, Mayfield, Newcastle, was visited on 19th and 20th October, 1936, and the air sampled with the Greenburg-Smith Impinger Apparatus in the pickling, galvanizing and stripping departments.

Pickling Room, 19th October.—The outside conditions were as follows :—

Dry Bulb	75° F.
Wet Bulb	57° F.
Relative humidity...	30 per cent.
Absolute humidity	2·8 grains per cubic foot.
Wind	Gusty westerly of moderate velocity.
Sky	Clear.

The inside conditions were as follows :—

Northern end of Pickling Room where first sample taken :—

Dry bulb...	80°F.
Wet bulb	62·5°F.
Relative humidity	36 per cent.
Absolute humidity	3·9 grains per cub. ft.

Middle of room between two pickling machines :—

Dry bulb...	81°F.
Wet bulb	64·5°F.
Relative humidity	40 per cent.
Absolute humidity	4·5 grains per cub. ft.

The pickling room is a large shed with partly open sides and a monitor roof.

At the time of sampling, there were two pickling machines in operation and the fumes in the building were evident. Workmen said that they were not as bad as on wet still days.

The first sample was taken at the northern end of the pickling room at a height of about 5 feet and a few feet from the pickling machine. Men worked at this spot.

Volume of specimen, 902 litres.

Sample No. 1.	Mg. in specimen.	Mg. per litre of air.	Mg. per cub. ft. of air.
Iron (Fe)	0·8	0·0009	0·025
Sulphuric anhydride (SO_3)	3·2	0·0036	0·10
Free sulphuric acid (as SO_3)–by difference	2·1	0·0023	0·065

The second sample was collected at the hand-rail above the northern pickling machine. The fumes at this point were fairly dense. Men did not work here.

Volume of specimen, 361 litres.

Sample No. 2.	Mg. in specimen.	Mg. per litre of air.	Mg. per cub. ft. of air.
Iron (Fe)	1·2	0·0033	0·093
Sulphuric Anhydride (SO_3)	3·2	0·0089	0·25
Free sulphuric acid (as SO_3)–by difference	1·5	0·0042	0·12

On leaving the pickling department at about 4·15 p.m., the temperatures and humidities in the centre of the room were as follows :—

Dry bulb...	79°F.
Wet bulb	63°F.
Relative humidity	40 per cent.
Absolute humidity	4·2 grains per cub. ft.

The pickling process is as follows :—The iron sheets received from the rolling-mills are put through a series of three acid baths, each with weaker acid, said to be 5 per cent., 3 per cent. and 1·5 per cent. H_2SO_4. The sheets are agitated up and down so that the acid reaches the whole sheet and removes any scale that has formed. As the sheets are immersed in the acid and agitated, clouds of steam and hydrogen are evolved and carry with them sulphuric acid and ferrous sulphate. After the pickling process, the sheets are inspected for any defects by the employees engaged on the process.

Galvanizing Room, 20th October.

The process of galvanizing is conducted at the northern end of a large building. The ventilation of this building is by a monitor roof and through the partition into the packing department. There are also a few doors on the eastern and southern sides. The process of galvanizing is as follows :—The pickled sheets are kept under salt water and are then taken out and placed in weak sulphuric acid (about 1 per cent.) to remove any oxide. Then they go through rollers and into the flux which consists of ammonium chloride and a little tallow to cause it to froth. From the flux they pass through molten zinc to which a little tin and a little lead are added. The zinc is kept molten at 430°C. From here they pass through rollers and thence on to an endless belt which conveys them to the packing department where they are treated with dichromate and are dried and cut to size, etc.

The flux gives off dense white fumes of ammonium chloride and white fumes, presumably ZnO, are given off by the molten metal.

The zinc is electrolytic and is said to contain no arsenic.

There were six or seven such machines in operation when the tests were made. The air was thick with fumes.

The first sample was taken between the two most northern galvanizing machines at a height of about 4 feet. Men were working close to this spot.

Volume of specimen, 909 litres.

Sample No. 3.	Mg. in specimen.	Mg. per litre of air.	Mg. per cub. ft. of air.
Sulphuric anydride (SO_3)	7·0	0·0078	0·22
Sulphur dioxide (SO_2)	1·5	0·0017	0·048
Arsenic (As)	0·004	0·000004	0·0001
Ammonia (NH_3)	8·0	0·0089	0·25
Ammonium chloride (NH_4Cl)	25·0	0·0278	0·79
Zinc (Zn)	0·36	0·0004	0·011
Lead (Pb)	0·03	0·00003	0·0008

The second sample was taken from above the most northern galvanizing machine. Men were not working here.

Volume of specimen, 363 litres.

Sample No. 4.	Mg. in specimen.	Mg. per litre of air.	Mg. per cub. ft. of air.
Sulphuric anhydride (SO_3)	7·0	0·019	0·54
Sulphur dioxide (SO_2)	0·50	0·0014	0·040
Arsenic (As)	0·016	0·000044	0·0012
Ammonia (NH_3)	16·0	0·044	1·25
Ammonium Chloride (NH_4Cl)	50·0	0·14	3·96
Zinc (Zn)	0·72	0·002	0·057
Lead (Pb)	0·06	0·00016	0·0045

The temperatures and humidities in the galvanizing room were as follows :—

Between two pots, site of Sample No. 3 :—

Dry bulb	82·5°F.
Wet bulb	62°F.
Relative humidity	29 per cent.
Absolute humidity	3·4 grains per cub. ft.

About two yards from machine (near molten zinc) :—

Dry bulb	88°F.
Wet bulb	65°F.
Relative humidity	27 per cent.
Absolute humidity	3·6 grains per cub. ft.

About one yard from machine (near molten zinc) :—

Dry bulb	98°F.
Wet bulb	68°F.
Relative humidity	19 per cent.
Absolute humidity	3·5 grains per cub. ft.

Stripping Tank.

This is a large tank a little above floor level at the southern end of the same building as the galvanizing machines. It is near the open doorway and is well ventilated. No fumes from the galvanizing pots were noticeable at this end of the building. Galvanized articles are placed in this tank to remove zinc and hydrogen is evolved with a little sulphuric acid and perhaps a little arsine.

The sample was taken at the side of the tank.

Volume of specimen, 774 litres.

Sample No. 5.	Mg. in specimen.	Mg. per litre of air.	Mg. per cub. ft. of air.
Arsenic (As)	0·003	0·000004	0·00011

The temperature and humidity near the stripping tank were as follows :—

Dry bulb	81°F.
Wet bulb	60°F.
Relative humidity	27 per cent.
Absolute humidity	3·0 grains per cub. ft.

The outside temperature on 20th October was as follows :—

Dry bulb	76°F.
Wet bulb	58°F.
Relative humidity	31 per cent.
Absolute humidity	3·0 grains per cub. ft.
Wind	Gusty westerly of moderate velocity.
Sky	Clear.

Opinion on Samples.

Men would breathe the air sampled in Samples Nos. 1, 3 and 5.

Sample No. 1.—Contains iron sulphate to the extent of 0·0024 mg. per litre of air; taking that a man would breathe 4½ cubic metres in eight hours, that is, 4,500 litres each containing 0·0024 mg. of iron sulphate, that is, 10·8 mg. of iron sulphate—$\frac{1}{6}$th grain—an amount which, in my opinion, is negligible.

It also contains sulphuric acid to the extent of 0·0023 mg. per litre, and a man might breathe the same quantity of sulphuric acid—$\frac{1}{6}$th grain per eight hours. This equals approximately about two parts per million of air by weight, and is $\frac{1}{5}$th as much as is allowable for long exposures.

Sample No. 3.—Sulphur dioxide—The amount found is about $\frac{1}{20}$th of the amount allowed for prolonged exposure.

Sulphur trioxide—The amount found approaches that which might cause irritation or ill-health.

Arsenic—The amount breathed in a day's work would be 0·018 mg. of arsenic; a quite negligible amount.

Lead—would be 0·1 mg. per day; $\frac{1}{20}$th of the amount necessary to produce symptoms.

Ammonium chloride—breathed in eight hours would be 125 mg. This equals two grains; in medicine often sixty grains are given daily over long periods.

The amount of zinc breathed in eight hours is 1·8 mg., which, in my opinion, is negligible.

Sample No. 5.—The arsenic found here is of the same order as in Sample No. 3, and can be neglected from a health point of view.

In my opinion, the breathing of air sampled would have no easily recognisable effect on the health of the men engaged by reason of the chemicals contained in it which are small in amount and very slight action on the teeth should occur. The steamy fumes might, however, cause respiratory disease as bronchitis, and it must be remembered that these remarks apply solely to the conditions sampled, which are probably better than the average conditions.

Dermatitis.

Dermatitis Due to Oil.—Two men employed mule-spinning developed a follicular dermatitis of the legs. The dermatitis was considered to be due to oil.

A man employed willying at a woollen mill developed a follicular dermatitis of both legs and feet and less so of forearms. The condition was thought to have been caused by sulphonated oils.

A boy, employed painting moulds with mineral oil, developed a rash on the right thigh and both forearms which spread to almost the entire body. The dermatitis may have been due to oil.

Dermatitis Due to Alkalis.—A pastrycook developed a papulo-pustular rash of both arms which cleared up on ceasing work. Three months after returning to work the rash re-appeared on the right arm and he again ceased work. On again resuming, the rash re-appeared within a month. He did not give any reaction to flours, yeast foods, etc., and the conclusion was formed that the dermatitis was due to rubbing his arms against the edges of vessels whilst working with weak alkalis.

Complaints of dermatitis amongst cleaners employed in State schools were brought under the notice of this Division by the Department of Education. The dermatitis was thought to be due to a cleansing powder used, which contained a large percentage of soda ash.

A man employed in the dye-house of one of the woollen mills, where he came into contact with alkalis and soaps during scouring, developed a scaly, vesicular rash of both hands and a slight rash of the feet.

A man employed "fleshing" skins at a tannery where he handled arsenic, sodium sulphide and lime, developed a rash of both hands and forearms and the heels of both feet. The rash was probably due to the alkaline sodium sulphide and lime, although arsenic may have been culpable. The dermatitis of the feet was due to the alkaline water dripping off his apron into his gum-boots.

Several cases of dermatitis among hairdressers were brought under our notice. They occurred amongst the operatives of electric permanent hair waving machines. The permanent waving fluids used consisted chiefly of yellow ammonium sulphide; some of them contained, in addition, sodium sulphite. The dermatitis was probably due to the keratin-solvent action of the yellow ammonium sulphide.

Other Dermatogoses.—A man who was employed for one month dry cleaning with trichlorethylene, stated that he developed a rash of the entire body. When seen two months after leaving work, he had a few follicular pimples of the flexor surface of the left forearm, and maculo-papular rash and cubital fossa of the right forearm. A few follicular pustules of the lateral surface of both knees were also present Another case of dermatitis due to trichlorethylene in a man engaged cleaning the leather seats of cars, was brought under the notice of this Division.

A man employed bagging linseed meal, developed a dermatitis of the calves, forearms, back of neck and the whole of the face area. He gave positive patch tests to linseed oil and meal.

A wharf labourer, employed unloading a cargo of tobacco, developed a rash and oedema of the hands and face. The dermatitis later spread to the whole of the body. He gave a positive patch test to tobacco leaf.

A septic folliculitis of the arms was seen in two men engaged in repairing dung-laden cattle trucks, and an erythematous rash in a rubber worker.

Studies in Industrial Hygiene, No. 19.

The Lungs of Coal, Metalliferous and Sandstone Miners and Other Workers in New South Wales, Chemical Analysis and Pathology.

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CONTENTS.

INTRODUCTION.

This contribution to our knowledge of the chemistry and pathology of lungs affected by dust might, we hope, serve as material for a monograph on pneumonokoniosis in New South Wales, and form with future work a foundation upon which further knowledge might be built, until there exists a satisfactory working basis of the dust diseases of our industrial community. At present, a precise account of the causation of dust diseases in our community cannot be written, but it is a diminution of our present knowledge to say, as has been said in our local tribunals, that very little is known about silicosis. It might well be contended that we know much more about the cause of silicosis than we do about the cause of most diseases, and a great deal more about its prevention, even if we know nothing about its cure.

The limitation of our knowledge of dust diseases is chiefly in the matter of causation. That free silica as quartz in various minerals as sandstone, quartz, etc., is an outstanding cause of pulmonary fibrosis is agreed upon, but the part played by other dusts, chiefly the silicates (combined silica) and " coal-dust " is still a matter for inquiry. One of these silicates, asbestos, is a proved cause of fibrosis in humans; another, kaolin, of fibrosis in animals. The work of investigating the action of dusts other than quartz must be long and tedious, for rarely in industry does one find an exposure to a dust which does not contain quartz, even if this may be in quite minimal amounts. We must turn to the few industries where there is exposure to dusts which contain no free silica to inculpate or exonerate these dusts.

It is becoming more obvious that, in human lungs, one dust may modify the action of another. For many years we have thought that, while there was ample evidence to blame quartz dust, there was little evidence to exculpate some silicates and " coal-dust " as a potential cause of pulmonary fibrosis.

CHEMICAL ANALYSIS AND ANIMAL EXPERIMENTS.

Two broad lines of research lay open: one might try by chemical analysis to determine the amount of free and combined silica in the lungs of various workers and to deduce from these analyses the cause of the fibrosis; or one might, by animal experiment, determine the action of pure substances in suitable experimental chambers.

Along the first road we have travelled some way, and the analyses of this series of lungs reveals in some instances good reasons for believing that the fibrosis found does not depend entirely on the minimal amount of free silica present, but rather on the silicates or the " coal-dust " found. Along the other road our progress has not been rapid, for such animal experiments require the life of a guinea pig, but we have acquired the material for future work, and, by producing gross, macroscopic fibrosis in numerous guinea pigs by dusting with sandstone and quartz, and lesser degrees of fibrosis by dusting with shale and coal containing small or minimal amounts of free silica, we have reached a stage where we can pass on to the use of pure dusts of silicates if these may be obtained.

PETROLOGY.

It is regretted that petrology is not very helpful in this work. It is very difficult and often impossible by petrological means to determine the nature of mineral particles of two microns or less diameter, such

as are found in the lungs, and, unless the mineral residues of the lungs are treated in such a way as to remove the most readily soluble salts, no petrologieal examination is possible. But this treatment takes away all soluble silieates and leaves quartz and most of the intractable silieates. Of these intractable silicates, one, sericite, by its fortunate refringenee appears, as it were, in shining armour, to attract attention and puts in the background the dull or amorphous particles of quartz or kaolin which are more hostile.

RECENT ENGLISH OPINION.

Reference may be made here to the most recently published opinions of English authorities on dust fibrosis of the lungs, particularly of eoal-miners.

Middleton (1) has collected a very useful summary of the various accounts of the fibrosis found in coal-miners in his informative paper on "Industrial Pulmonary Disease due to the Inhalation of Dust." Among his eonclusions are :—

"(4) When the dust of free silica is inhaled mixed with certain other kinds of dust in important amount, the arrangement and distribution of the resulting fibrous tissue may be modified. Such modifications have been found in workers in coal-mines and haematite-mines.

(5) When the inhaled dust consists of silica combined with bases, as silicates, some degree of change in the pulmonary tissue appears to result. In this respect asbestos dust is unique amongst silieates in the prevalence and severity of the disease which it causes. The physieal form of asbestos differs from that of all other industrial dusts.

(6) The fibrosis produced in the lungs by the action of silicates differs from that produced by free silica, and the types can be distinguished by radiological and histological means.

(7) In certain states of the lungs, for example in the presenee of tubereulosis, the aetion of silieates may be modified.

Cooke (2) writes, "That neither anthracite nor the coal-dusts cause fibrosis is shown by the conelusions of the Commit ee of the Medical Research Council on industrial pulmonary disease after the examination of a number of eoal-trimmers and others. The report states that the Committee was unable to find any evidence that the inhalation of anthracites or coal-dust had eaused fibrosis of the lungs. Many theories have been put forward to account for the large number of eases in anthracite workers — pre-existing pulmonary disease, bronchitis or damage to the lungs by nitrous fumes from explosives—but the explanation will probably lie solely in the presence of silica dust. It would be out of place to discuss the silicate theory here; but the consensus of opinion is that sericite, or secondary white miea, and other silicates do not play any part in the production of the disease.'

For reasons which are elaborated in sections of this paper, we find ourselves by no means in agreement with the opinion that coal-miners' lung is only the product of free silica. We believe that silieates and "coal-dust" may, in the absence of free silica, cause pulmonary fibrosis and that silicates and "coal-dust" alter the aetion of free silica. That coal-dust and not the country rock is to blame is shown not only by the analysis of affected lungs and coal seams, but by the fact that we have seen individuals affected with pulmonary fibrosis who did not work underground, but only on the screens.

In an earlier aceount (15) we have published illustrations of typical examples of pneumonokoniotic lungs of various workers.

PATHOLOGY.

The pathology of human pneumonokoniosis has been chiefly studied in the silicotic lung and it is not proposed to detail the work which has been done on the origin and development of the silicotic nodule but to refer to the recent work of Simson and Strachan.

Simson (3) showed that the "exact site in which the simple silicotic nodule manifested itself was a limited area of tissue in relation to the respiratory bronchioles and the proximal part of their continuation, the alveolar ducts."

Simson and Strachan (4) extended and amplified this knowledge of the origin of the simple silieotic nodule in humans.

Gardner (5) gives a concise statement of his widely accepted views on the modifying effect of other substances inhaled with silica in the following words :—"On the other hand, certain other substances seem to retard or prevent silica from exerting its usual effects. The lesions of silicosis in the anthracite coal-miner and the hematite miner are often quite atypical even though the concentrations of silica to which these men have been exposed may have been high. Coal and hematite alone tend to produce sub-pleural and perilymphatic pigmentation with the formation of considerable cellular connective tissue in these locations. The parenchyma of the lung suffers little damage and no nodules are produced. When a little silica is inhaled with these substances, the connective tissue tends to become more dense and hyaline in character but still retains its perilymphatic distribution. If the amount of silica is still greater, nodules form along the lymphatic trunks. Only when silica predominates do nodules develop in the parenchyma of the lung, but even these nodules lack the clear cut definition of the uncomplicated silicotic lesion. They are surrounded by wide, stellate zones of deeply pigmented cellular connective tissue."

We would emphasise a later stage in the development of perilymphatic fibrosis and this is where, in our coal-miners, the fibrosis becomes, as it were, segmented and there is seen the formation of nodules, mostly elongated but still nodules, which are loaded with coal-dust and have developed in a perivascular and peribronchial situation and not in the more distal, bronchiole-alveolar duct situation typical of pure silicosis. There occur eases among our coal-miners where there is a development of nodules in the pure silicotic manner, but, in a lung in which the free silica is very small and the combined silica very large, it is these eases that raise doubts as to whether there are not silieates which may produce the nodulation regarded as characteristic of free silica.

That this profuse perivascular fibrosis is a common reaction to mixed dusts is undoubted and that it modifies the lung reaction to dusts containing low percentages of free silica is clear.

In a later paper, Gardner (17) gives his reasons for desiring to abandon the use of the term pneumoconiosis.'

He considers its implication too broad as it " connotes a disease process when actually its users may have in mind a benign pigmentation of the lungs with or without slight proliferative changes." He writes, " If the inhalation of iron or coal dust caused damage it was because they were mixed with appreciable quantities of silica. Other dusts, with the exception of the silicate, asbestos, were apparently quite harmless. The search for still other dangerous dusts is being continued but thus far none has been discovered." In his summary he writes, " Non-siliceous dusts are generally responsible for an exaggeration of the linear markings of the lung. As far as known the slight perilymphatic reactions responsible for them do not interfere with pulmonary function and they do not alter the native susceptibility to tuberculosis."

In view of the chemical analysis of some of our coal-miners' lungs, we are not prepared to accept that free silica is necessary for marked fibrotic changes, and we believe that the disabling emphysema of coal-miners is associated with the fibrosis caused by coal-dust which only contains minute amounts of free silica.

Gardner has referred to the " fine emphysema usually associated with the fibrosis " produced by the silicate, asbestos ([18]) and writes ([19]), " The lungs of coal-miners frequently show areas of coarse emphysema and even ill-defined cavities apparently formed by rupture of the walls of contiguous air spaces. Whether this so-called ' phthisis atra ' is due to the coal dust or to silica inhaled at the same time is not known. The causation of ' miners' asthma,' a common complaint in coal-miners, likewise needs further study. Dyson suggests that such asthma may be of cardiac origin."

Dyson ([20]) writes, " Practitioners in the anthracite coal regions recognise that cardiac failure is a frequent cause of death in pneumoconiosis. A definite cardiac lesion is generally not diagnosed, however, since there is no enlargement of the transverse diameter of the heart. It is my purpose to point out that pneumoconiosis, a disease of long-standing pulmonary fibrosis, causes obliteration of much of the vascular bed in the lungs. It is reasonable to suppose that the first chamber of the heart to show reactionary change is the right ventricle. The proposition is made, therefore, that the convex shadow of the left border described above (when observed in miners with no other indication of heart disease) be regarded as evidence of right ventricular hypertrophy caused by pneumoconiosis."

Cummins and Sladden ([6]) have recently described the pathology of the lungs of Welsh coal-miners. In these lungs, there is apparently in some a development of nodules of the siliceous type. They stress the outstanding microscopic features as fibrous hyperplasia and dust accumulation. Describing the perivascular dust stasis, they say, " A typical early lesion consists of a central blood vessel or bronchiole surrounded by a corona of dust-containing cells." Dealing with the nodular fibrosis, they write, " In some of the earlier nodules, too, may be seen traces of cellular structures suggesting that the nodule had been formed around what was originally a blood vessel or a bronchiole."

Sayers, Bloomfield *et al.* ([7]) have succinctly described the microscopic appearance of anthracotic lungs : " Black particles of coal dust are seen in macrophages (large mononuclear leucocytes) in the alveoli. Free dust particles in the alveoli and particles in the alveolar epithelial cells are rarely seen. Collections of dust-bearing macrophages are noted in the perivascular and peribronchial lymphatics and the adjacent interstitial connective tissue. A fibrous hyperplasia is present along the lymph channels, which, in portions so increases as to form nodules that appear as concentric masses and irregular diffuse areas. In the centers of some of the smaller nodules are noted compressed and hyalinized blood vessel walls. The centers of the larger nodules are often free of appreciable amounts of coal dust, and are of well-formed, white fibrous connective tissue. Hyaline degeneration is frequently seen. Collections of dust-laden macrophages are present at the periphery of these nodules, but free extracellular coal dust in large quantities is noted in the adjacent underlying area of dense connective tissue. When the nodules become confluent, the peripheral depositions of coal dust become enclosed in the larger nodule so formed. Areas of central, amorphous, finely granular necrosis are sometimes seen. The peritracheal and pulmonary lymph glands show a fibrous hyperplasia and dense depositions of coal dust, often so marked as to obscure the histology of the organ."

In the lungs of our coal-miners who have inhaled during life the dust of coal mines in which the amount of free silica is from one half to two or three per cent., it is observed that the characteristic silicotic nodule is uncommon, and where found, is often more reasonably from the chemical analysis considered the product of combined silica rather than of free silica. The common pathological feature of these coal-miners' lungs is the development of a perivascular fibrosis, and, as this widespread perilymphatic fibrosis increases, an irregular nodulation chiefly peribronchial occurs, and at a later stage each irregular, black, fibrotic nodule has in it the remains of a crushed bronchiole or blood vessel.

Such an appearance is not common in the whorled silicotic nodule which is formed at a more distant site but may occur in the later stages of silicosis when there is also well-developed perivascular fibrosis.

This initial difference in the fibrosis resulting from free silica from that of the less active dusts is also accompanied by the much more frequent development in coal-miners' lungs of emphysema. This emphysema is associated with that portion of the alveolar or atrial structure which is adjacent to the perivascular fibrosis and nodulation. To judge the development of emphysema in lungs and so estimate the damage to the respiratory function of the lung, there is no method so helpful as the examination of thin slices of the various lobes under water by the dissecting microscope, using a magnification of from ten to thirty. Against the dead black tissue of a coal-miner's lung, it is practically impossible by the naked eye to judge the degree of perivascular nodulation and accompanying emphysema, but the dissecting microscope, used with strong reflected light, makes it possible to see the degree of fibrosis and emphysema, and is a particularly helpful method of examination. Much of the pathological work on the fibrotic lungs is best based on the macroscopic examination and the appearance under the dissecting microscope, for sections are too likely to be but a small sample of the lung and, while useful to study the finer details of the fibrosis and the presence of changes due to infection, cannot be used to estimate the quantum of fibrosis and emphysema or other generalized changes.

It has been stressed in reports on many of our coal-miners' lungs that the obvious incapacitating element is the development of emphysema, and from clinical and pathological observations it seems to us that it is often a primal factor and not secondary to bronchitis which appears to be accepted as the incapacitating factor among European and American coal-miners.

An instructive note is given by Simson ([3]) Fig. 4, case 2, in which he figures a zone of emphysema around a nodule and states that the " contraction of dense fibrous tissue of nodules has given rise to a peculiar dragging effect on attached alveolar walls, characteristic of very old nodules." In our coal-miners' lungs, a similar action seems capable of explaining the gross emphysema commonly found.

Sundius, Bygden and Bruce ([8]) in 1936 wrote on the mineral content of the silicotic lungs of an earthenware worker and give a very useful account of their methods and results. In some remarks on the origin of the silicotic changes, these authors write interestingly :—

> " The dust is transported through the lymph-vessels to the local tracheo-bronchial glands where the lymph is filtered. In this way the dust gradually accumulates there. At this place, too, the beginning of the silicotic changes are first observed (Wulff, Strachan, and Simson). By the progressive shrinkage of the lymphatic glands the drainage of the lymph is rendered more difficult and at a certain time stagnation of its content begins. At an early stage progressive lymphangitis is produced as a result of which the lymph-vessels are obliterated. As a consequence, the removal of the phagocytosed dust-particles, which are transferred through the alveolar walls, is impeded and the dust is continually accumulated in the lung tissue and must remain there for a long time. Here it causes local irritation by its mere presence. The irritation by the dust is comparable with the irritation of foreign bodies in general, and the changes of the lungs in the case of pneumonoconiosis are similar to the reactions which are generally at the disposal of living organisms as a means of defence, namely phagocytosis, removal of the foreign body, formation of connective tissue, and cicatrisation. If both the former processes are prevented, the formation of cicatrical tissue begins and in the case of a lung impregnated with dust it is clear that the changes must be extensive. It is also conceivable that a pathological process of this kind must take a certain time and that it may continue to progress after dusty work has ceased.
>
> " That dissolving processes take place in the lungs can scarcely be denied. Only in this way can we explain the absence of pneumonoconioses due to dusts of limestone, gypsum, possibly also of cement and certain slags from iron furnaces. But in most cases the silicates are very difficult to dissolve, and this is still more true with regard to quartz, especially if the reaction of the solvent—as would seem to be the case with the fluids in the lung—is of an almost neutral character.
>
> " We may conclude that the conditions governing the real cause of the silicotic changes are rather complicated and as yet they present too many contradictions to permit a definitive and general conclusion. In the case studied by us the evidence is against chemical changes of the dust; or at least, if changes have occurred, they must have been small, though the dust had remained in the lung for many years."

Since the drafting of this paper, Professor Cummins' recent paper ([16]) has been read. He deals with the difficulty that has arisen in England and Wales in the classification and pathology of coal-miners lungs and says, " In the above account of the classified types of pneumonoconiosis, much stress has been laid upon fibrosis, whether nodular or diffuse. Fibrosis, however, though the direct outcome of the reaction of the tissues to active dusts, is not, in itself, the only abnormality in pneumoconiotic lungs, nor does the amount of fibrosis necessarily correspond with the degree of dyspnoea noted.

The object of this paper is to call attention to certain less frequently described alterations which seem to play an important role in cases of pneumonoconiosis. The fibrotic changes have frequently been described and need not be discussed here, but consideration will be given, instead, to emphysema, bronchitis and the changes in the lymphatic glands."

– – – " Clinically, the importance of this emphysema has been stressed by P. K. Sen as the essential factor in coal-miner's dyspnoea and he establishes the fact that the dyspnoea is often out of all proportion to the extent of lung fibrosis as assessed by X-ray findings."

He describes the state of emphysema that is found and discusses the elastic tissue in pneumonokoniotic lungs and relates the emphysematous distention to the consolidation and fibrotic shrinkage pathologically, and dyspnoeic state clinically.

He concludes that, " Pneumonoconiotic lungs of all types show appearances suggesting damage to the elastic structure of the lung, a finding which may, perhaps, have a bearing on the emphysema and dyspnoea met with. The observations here recorded appear to justify the conclusion that the emphysema associated with pneumonoconiosis in South Wales is not necessarily only a compensatory effect of lung fibrosis, since it may be well marked in persons suffering from pure anthracosis with only minimal fibrosis. The precise etiology of this type of emphysema invites further investigation."

CHEMICAL ANALYSIS.

The chemical analysis of pneumonokoniotic lungs is of importance for two reasons, firstly, by it, we may seek to confirm the pathological diagnosis of dust fibrosis, and secondly, to acquire knowledge of the various dusts that may provoke fibrosis or lead to the onset of tuberculosis, emphysema or bronchitis.

While in some industries where the dust inhaled is more or less simple, as for example, quartz miners, logical conclusions may be easily arrived at, nevertheless, in many industries, the dust inhaled is so varied in character (*e.g.*, coal-miners), that only a critical examination of the data revealed by the analysis of numerous lungs, will enable the expression of reasoned opinion as to the individual power of these various dusts to cause pulmonary fibrosis.

In order to gain the knowledge required, it will be necessary to have competent analyses of the lungs of various groups of workers in different countries, and these international analyses must be comparable.

For this reason, we have discussed in some detail the few important analyses of the pneumonokoniotic lungs of various groups of workers that have been published, and stressed the different methods of analysis and recording of results. It is to be hoped that the Silicosis Committee of the International Labour Office will recommend a standard method of analysis which will make comparable international work.

That a generally accepted method of analysis is essential, may be illustrated by the use of the term dry or dried lung. Portions of lung dried on a water-bath, will, for instance, probably contain 25 per cent. more water than portions dried in a hot oven; and so the amount of silica, free and combined, per gram

of dried lung would show relative changes. It appears that our figures, made from lungs dried in a hot oven, should be reduced by 20 per cent. to compare with the figures of Cummins and Sladden, obtained by drying lungs on a water-bath.

Ambiguity Resulting from Use of Term "Total Silica" in Different Senses.

As the word "total" is likely to become ambiguous if used to express the meaning of "both free and combined silica" and also "the silica, free and combined, contained in both lungs," and lead to confusion in the correlating of the results of different writers, we have in this monograph not used the term "total silica," but written "free and combined silica," and designated the silica contained in the entire lungs as "free and combined silica content of the lungs." Thus we have used the expressions—

1. Free and combined silica expressed as milligrams per gram of dried lung.
2. Free and combined silica content of both lungs.

In New South Wales, the results of chemical analyses of miners' lungs differ with each field. While our sandstone workers' lungs resemble in the nature of the dust inhaled and the pathological response and chemical analysis those of the South African gold miners, our metalliferous miners' lungs differ markedly from them. Our coal-miners' lungs may or may not resemble those described from Wales, for we lack any separation in nearly all the analyses published of the free and combined silica, such as is given in these analyses and in our earlier work.

While there are good reasons for recording the total amount of silica, free and combined, and the total amount of other dusts found in the two lungs of an individual, this plan offers practical difficulties, for it means the complete destruction of medico-legal material, and for a standard method we suggest that the free and combined silica content of the lung be estimated from the analysis of one half of both lungs divided in the axillary plane so that there is a more or less even division of the lobes of the lung, which is essential, as it is seldom that the lobes are equally fibrosed.

Cummins and Sladden ([6]) made their analysis of Welsh coal-miners' lungs from fair samples cut from various parts of the wet lungs so as to be representative of the whole organ. They used 300 to 400 grams of wet lung and returned their analyses as ash, silica (which is both free and combined silica), "coal" (ash free) and iron, as a percentage of the dried lung; and gave also, by estimation, the total silica which includes both free and combined silica, in grams for both lungs. They did not separate the combined and free silica and estimated the "coaly matter" by a process of preferential oxidation of the lung powder by nitric acid. Their estimation of coaly matter probably approximates the estimation of carbon in our analyses of coal-miners' lungs. In their Class A, coal-miners dying of pulmonary disease after long disablement, the average amount of silica, free and combined, found in the lungs was 9·4 grams. In Class B, the average amount was 4·4 grams. These miners mostly had fibrosis, but were not known to have any disability resulting from it.

In coal-miners, who had worked in New South Wales only, the average free and combined silica content of the lungs, found in fifteen cases of pneumonokoniosis, more advanced than early, was 2·02 grams, the combined silica being 1·46 grams, the free silica, 0·56 gram.

Many of our miners would come into their Class B group. In their Class A, the average of the total "coaly matter" found in the lungs was 34·2, as compared with 21·5 grams of "carbon" found in the lungs of coal-miners who had worked in New South Wales only and had developed pneumonokoniosis *more advanced than early*, but many of our lungs would come into Class B of Cummins and Sladdens' cases, which included coal-miners not dying of pulmonary disease and not known to have any pulmonary disability, and, in this group of Welsh miners, the average total coaly material in both lungs was 32·1 grams.

Sladden ([9]) writing of the silica content of the lungs, deals with sixty cases, which include those previously reported on by Cummins and Sladden ([6]).

These cases include "hard heading" workers in collieries, ordinary colliers from the coal face, stonemasons, coal trimmers, a boiler flue cleaner, potters and a ganister worker. Silica in this article is defined as silica, free and combined. He writes, "In a study of the lungs of twenty-four coal-miners whose deaths were attributable to accident or illness and not especially to lung fibrosis, analyses showed an average of 4·1 grams total silica in the lungs of each man (1·15 per cent. of the dried lung). The ages of these men ranged from 36 to 69 and a study of the total silica content in relation to the ages is of interest; five men were below the age of 50, and their silica totals averaged 2·0 g.; for the remainder, 19 men over the age of 50 years, the average total was 4·5 g. None of these men was known to have been especially engaged in boring rock; they were representative of "ordinary" coal-miners exposed to the ordinary conditions of work underground." The silica, free and combined, content of the lungs of our twenty-two coal-miners, who had worked in New South Wales only, affected or unaffected by pneumonokoniosis, averaged 1·61 g., the combined silica being 1·14 g., and the free silica 0·47 g. The average of those cases affected by pneumonokoniosis more advanced than early was 2·02 g., the combined silica being 1·46 g. and the free silica 0·56 g.

Sladden concludes, "On the basis of the experience related here that fibrosis of an important extent, clearly contributory towards death, is usually present when the silica content of the lungs determined chemically exceeds 1·0 per cent. of the dried lung substance. Quantities below this are not necessarily negligible but have seldom been associated with deaths attributable to pulmonary disease except when tuberculosis has intervened. When the silica content exceeds 1·6 per cent. the fibrosis associated is with practically no exceptions very severe and sufficient in itself to lead to death; this accords with the published records of many observers from various parts of the world. The analyses recorded here suggest that a silica content of as much as 1·6 per cent. causes so much damage to the pulmonary drainage system that the accumulation of further dust inhaled is rapidly accelerated; exposure therefore to silica risk at this stage greatly enhances the danger to life." His figure of 1·0 per cent of silica (free and combined) of the dried lung substance equals 10 milligrams per gram of dried lung. In the lungs of New South Wales coal-miners with pneumonokoniosis, more advanced than early, we found an average of 8·3 milligrams per gram of dried lung (6·0 mg. combined silica, 2·3 mg. free silica), ranging from 15·3 mg. per gram of dried lung (10·6 mg. combined silica and 4·7 mg. free silica) to 1·1 mg. per gram of dried lung (1·0 mg. combined silica and 0·1 mg. free silica). To his further conclusion that "when the silica content exceeds 1·6 per cent. (16 mg.

per gram of dried lung), the fibrosis associated is with practically no exceptions very severe and sufficient in itself to lead to death," it may be added that, in many lungs where death has come from silicosis and tuberculosis, this amount will not be found, chiefly due to tuberculous necrosis of consolidations. His final conclusion that the analyses " suggest that a silica content of as much as 1·6 per cent. causes so much damage to the pulmonary drainage system that the accumulation of further dust inhaled is rapidly accelerated; exposure therefore to silica risk at this stage greatly enhances the danger to life " is one which is contrary to our opinion, formed from the fact that metalliferous miners' lungs, when fibrosis has resulted before working in coal mines, acquire very little coal-dust. To us it appears that there is a limit to the amount of silica that the lung may acquire, modified, however, by a time factor and the degree of dust exposure. More silica is taken in by a lung exposed to very dusty conditions for a short period than by a lung exposed to less dusty conditions for a much greater period. Given a lung that has received a certain dose of dust with a sufficient time factor for the development of fibrosis, then it seems to us that the further intake of dust by the lung is diminished rather than accelerated. But a proper appreciation of this problem will only appear when our knowledge of the mechanism of the dust's entry into and elimination from the lungs is increased.

The examination of a number of pneumonokoniotic lungs and particularly of coal-miners' lungs always gives rise to speculation on the cause of the uneven distribution of dust in the lungs. The upper lobes are practically always the chief and primary site of dust accumulation and fibrosis, followed by the upper part of the lower lobes.

The accepted theory which owes its origin to students of tuberculosis, is that owing to the lesser movement of the upper lobes the lymph flow is less—the stagnation of lymph flow. If this is the full explanation of the freedom from dust accumulation in the lower lobes, then it may be surmised that any interference with this lymph flow will cause an acceleration of dust aggregation. It is chiefly the disparity in the amount of dust acquired by the upper and lower lobes that causes us to question that the stagnation of lymph flow is the full explanation of this mechanism.

Haldane and Priestley ([10]) quote Professor Sir Arthur Keith, " He showed that during inspiration the lungs do not expand equally and simultaneously at all parts, but open out part by part, somewhat like the opening of a Japanese fan. The parts nearest the moving chest-wall (for instance, the diaphragm) expand first, and other parts follow; those near the roots of the lungs expanding least." On the present reasoning, one has to accept that the lobe of the lung which presumably receives the greater quantity of dust, is seldom affected by it.

Stewart and Faulds ([11]) deal with the lungs of haematite miners who were exposed to the dust of iron oxide, containing probably about 10 per cent. of free silica. This dust has been analysed by Cronin and Smith. Cronin ([12]) has expressed the opinion that the " silica " he records was probably present as such and not as a silicate and, from the text of Smith's ([13]) article, it appears that the silica he records was mostly free. Stewart and Faulds give a summary of fifteen cases showing varying degrees of fibrosis.

The lungs of their cases of fibrosis contained from 7·5 milligrams to 29·6 milligrams of silica, free and combined, per gram of dried lung and from 46 milligrams to 136 milligrams of iron oxide.

In these lungs, the ferric oxide takes the place of the " coal-dust " in our New South Wales coal-miners' lungs with definite pneumonokoniosis, while the " silica " is to be compared with our silica figure, free and combined, which is 8·3 milligrams per gram of dried lung but, in our coal-miners' lungs, the average free silica is only 2·3 milligrams per gram, 6·0 milligrams being silicate. They used 300 grams of lung for analysis, " being an average sample of the whole lung."

So it appears that these cases (which have certain pathological features akin to those found in our coal-miners) resulted from exposure to a dust containing about 10 per cent. free silica, and the typical siliceous reaction is altered or modified by the iron oxide present. They remark, " Nevertheless, the suggestion does emerge that possibly the dust of oxide of iron may exert in a modified way a similar action to that of silica."

Simson and Strachan ([4]) give their preliminary observations on the mineral residues extracted from silicotic lungs. They employed the method of Dr. W. R. Jones of sliming the wet lung with fuming nitric acid, followed by ignition of the precipitate. They preferred this method because the results of the analyses of these residues closely approximate to that of air-borne mine dust, while the analysis of residues, obtained by the dried weight method, differs considerably from air-borne mine dust. They say " This is probably explained by the retention in these residues of soluble salts derived from the organic material in the lungs, and the soluble salts will necessarily be increased in the presence of pathological processes such as gross active tuberculosis, pneumonia and excessive fibrosis."

The mineral residue obtained in this manner, would probably consist of all the free silica and intractable silicates originally present together with portion of the silica liberated from tractable silicates.

In most cases both lungs were used for purposes of analysis and they returned their figures as the total weight of mineral residues in both lungs. From their table IVA, the following averages of total mineral residue in grams in both lungs is obtained:—

From normal lungs	0·46	grams of mineral residue in both lungs.
From lungs showing a very slight degree of silicosis ...	1·49	,, ,, ,, ,,
From lungs showing a slight degree of silicosis ...	2·06	,, ,, ,, ,,
From lungs showing a moderate degree of silicosis ...	2·59	,, ,, ,, ,,
From lungs showing a marked degree of silicosis ...	3·27	,, ,, ,, ,,
From lungs showing a very marked degree of silicosis...	6·37	,, ,, ,, ,,

It is to be noted that the majority of these lungs showed no active tuberculosis and so they are not comparable with analyses made of lungs where there has been marked destruction by tuberculous processes of the consolidated areas, which areas contain a greater amount of silica than the unconsolidated portions of the lung.

We might, however, tentatively compare the average figures for the free and combined silica content of the lungs in cases where we have been able to estimate this. The figures given are only approximate as it is our practice only to analyse one half, and sometimes less, of each lung.

Our figures are :—

From lungs (4) showing early or moderate silicosis or pneumonokoniosis (not coal-miners). 1·65 grams of free and combined silica in both lungs.

From lungs (17) showing marked or massive silicosis or pneumonokoniosis (not coal-miners). 3·8 grams of free and combined silica in both lungs.

The majority of these lungs had active tuberculosis and many tuberculous cavitation.

Sayers, Bloomfield *et al.* (7), dealing with Anthracosis in Pennsylvanian coal-miners, give the total silica determinations in six lungs. One hundred grams of dried tissue selected from representative portions of lungs were used in making the analysis. They found an average of 15·5 mg. of total silica (free and combined silica) per gram of dried lung. This is to be compared with the 8·3 mg. of free and combined silica per gram of dried lung found in our New South Wales coal-miners' lungs (in number 15) with pneumonokoniosis, more advanced than early, but we have further separated this into free silica 2·3 mg. and combined silica 6·0 mg.

Collins and Dible (14) of the University of Liverpool, England, have contributed a useful paper on the method of expressing the silica content of the lungs. These authors point out "certain pitfalls into which the mere expression of silica content in a certain form may lead, and to suggest the desirability of the adoption of a standard method of expression" and consider that "the method of expressing the siliceous infiltration in the lungs, least liable to errors and most valuable for purposes of comparison, is the total silica content of the organs."

They do not define "silica," but from the context, they mean silica, free and combined. They give useful criticisms "of the more obvious ways of expressing the silica content of the lungs";

(*a*) silica as a percentage of the wet weight of samples of the lung. This they consider of little value owing to pathological conditions as oedema or pneumonia.

(*b*) silica as a percentage of the dry weight. They do not consider this method free from fallacies, as the dry weight of a lung will vary considerably with any pathological condition which may be present. They give two clear examples showing "that pneumonic consolidation, by greatly increasing the proportion of organic matter, can have the effect of halving the percentage of silica in the affected lung when expressed in this way. However, they do not state whether the lungs examined were fresh or preserved with formalin.

(*c*) silica as a percentage of the mineral ash. This they show will vary with pathological conditions as pneumonia, calcification and iron oxide in haematite workers.

(*d*) total silica. They "come to the conclusion that the method of expressing siliceous infiltration in the lungs, least liable to errors and most valuable for the purposes of comparison, is the total silica content of the organ." They suggest using a single lung, and do not consider that "the differences in lung size between individuals would be great." To us, a great difficulty presents itself in their suggestion of a routine use of only one side of the lungs for analysis; for, in advanced cases of silicosis associated with tuberculous or other forms of cavitation, this would give very inaccurate results. And, the authors assumedly recognise this in their opening remark where they say they would seek information from chemical analysis where lesser degrees of pulmonary fibrosis were present.

Nor is it advisable in medico-legal work to destroy the entire lungs in what may be a contentious claim for compensation, and it is desirable to save portion of the lungs for future study. The method we have adopted of dividing each lung in the axillary plane and submitting the two halves to chemical analysis and estimating the silica content of the lungs from the weight of the lungs, probably gives an approximation sufficient for practical purposes, and we believe that the method of expressing the amount of silica, free and combined, in milligrams per gram of dried lung, is a practice more suitable for the chemical analysis of preserved, pneumonokoniotic lungs, showing various degrees of pulmonary fibrosis and tuberculosis or other necrotic changes. Moreover, the chemical analysis must always be read along with the pathological description of the lungs and allowance made for tuberculous or other necrosis, calcification and the amount of pneumonia present. Without having determined the question definitely, it nevertheless appears that, in cases of pneumonia, certain soluble salts are removed by preserving in 5 per cent. formalin.

Method of Analysis.

The method of analysis is as follows :—

The sample of lung, preferably one-half of each lung divided in the axillary plane, is cut into small pieces and dried in a hot air oven at 105° C. until of constant weight. The dry lung is than reduced to a powder in a mincing machine, weighed, placed in a platinum dish and heated until coked. The coked mass is then ground to a powder and again heated at a temperature which is sufficient to maintain the bottom of the dish at dull redness. The grinding is repeated as required until the ash is free from carbon. The time required is usually about twelve hours.

The analysis of the ash is carried out as follows :—

(1) Take 0·5 gramme of ash and place in a small beaker containing five millilitres of pure concentrated sulphuric acid and ten millilitres of distilled water.

(2) Heat gently on a sand bath until 1 millilitre of sulphuric acid remains.

(3) Cool, dilute with 50 millilitres of water and swing in a centrifuge until the supernatant liquid is clear.

(4) Decant the liquid and transfer the residue from the centrifuge tube to a small beaker by washing out with small amounts of concentrated hydrochloric acid; add a small amount of concentrated nitric acid, and heat on a sand bath until five millilitres remain.

(5) Dilute to 50 millilitres with water, centrifuge, decant and wash with 50 millilitres of one in ten hydrochloric acid by shaking and centrifuging (residue A).

(6) Wash the residue into a small platinum dish with 30 millilitres of a 10 per cent. solution of sodium carbonate and boil gently for five minutes.

(7) Transfer to a centrifuge tube and swing until the liquid is clear.

(8) Decant the liquid and determine the silica content as given below.

(9) Wash the residue with one in ten hydrochloric acid as in (5).
(10) Transfer the residue to a weighed platinum dish, evaporate to dryness, heat strongly over flame, and weigh (residue B).
(11) To the weighed residue add 5 millilitres of hydrofluoric acid, 0·5 millilitre of pure concentrated sulphuric acid, mix well.
(12) Heat on the water bath till most of the hydrofluoric acid has been evaporated, drive off the sulphuric acid, heat strongly, and weigh (residue C).
(13) Add 50 millilitres of water to the residue and heat on a water bath for two hours.
(14) Filter off the undissolved residue, evaporate the filtrate to dryness, heat residue lightly over a flame, and weigh (residue D).

In the above analysis the lung has been treated with sulphuric acid, and subsequently with a mixture of nitro-hydrochloric acid. This was found to be necessary because in some cases when the ash was treated with nitro-hydrochloric acid only, the insoluble residue contained a considerable amount of phosphates which could be decomposed only with concentrated sulphuric acid.

The residues obtained from the various stages of the analysis are composed mainly as follows :—

Residue A (Stage 5). Silica from silicates decomposed by acids, plus silica present as such in the lung ash, plus undecomposed silicates.

Residue B (Stage 10). Silica present as such in the lung ash, plus undecomposed silicates.

Residue C (Stage 12). Alumina, alkali and alkaline earth sulphates.

Residue D (Stage 14). Alkali and alkaline earth sulphates.

In practice it is found that Residue C rarely exceeds ten milligrammes. In these cases Residue C may be taken as being alumina, and multiplied by two approximates very closely to the amount of undecomposed silicates in Residue B. Residue D may be neglected.

In cases where Residue C exceeds ten milligrammes, it is necessary to determine the composition of Residue D, in order to allocate the correct amount of alumina and silica in the undecomposed silicates of Residue B.

The free silica in the ash is found by subtracting from Residue B the weight of the undecomposed silicates. The combined silica is the sum of the silica extracted by 10 per cent. sodium carbonate (Stage 6 of the analysis) and the amount in the undecomposed silicates. The alumina is the sum of that present in the solutions decanted at Stages 4 and 5 of the analysis, and the amount present in the undecomposed silicates.

The determination of silica extracted by 10 per cent. sodium carbonate (Stage 6 of the analysis) is carried out as follows :—

Make the decanted liquid up to a volume of fifty millilitres. Take one to five millilitres in a fifty millilitre Nessler tube, add thirty millilitres of water and two millilitres of a 10 per cent. solution of ammonium molybdate, mix, and add sufficient one in three sulphuric acid to make the solution acid to methyl orange. Make up to fifty millilitres, allow to stand five minutes and then compare the colour produced with the colour of a standard solution of picric acid (0·1024 gramme picric acid in one hundred millilitres of water). One millilitre of this solution made up to one hundred millilitres represents the colour which is produced by one milligramme of SiO_2 in fifty millilitres of solution.

For determinations of the constituents of the ash, other than silica and the small amount of alumina present in the undecomposed silicates, which are carried out on the solutions decanted at Stages 4 and 5 of the analysis, the usual methods are employed and it is not necessary, therefore, to mention them here.

The determination of the coaly matter present in the lung tissue is made as follows :—

(1) Take two grammes of powdered dry lung and place in a small beaker containing thirty millilitres of 25 per cent. sodium hydroxide.

(2) Boil gently until all the particles of lung tissue have been dissolved. This usually takes about one hour. The amount of liquid should be maintained at thirty millilitres by the addition of distilled water.

(3) Add sufficient concentrated nitric acid to neutralise the soda, and then five millilitres in excess.

(4) Boil until the liquid becomes brown-yellow in colour; five minutes' boiling is usually sufficient.

(5) Transfer the hot solution to a separating funnel, shake vigorously, and allow to stand in an upright position until all the carbon and fat have risen to the top.‡ Run off the liquid as completely as possible.

(6) Wash out the beaker with hot alcoholic potash (*) and transfer to a separating funnel, make up to forty millilitres with hot alcoholic potash, shake vigorously, and transfer to a centrifuge tube; wash out the funnel with alcoholic potash.

(7) Centrifuge until the liquid is free from carbon particles, decant, and wash twice with hot alcoholic potash by shaking and centrifuging.

(8) Wash residue twice (as in 7) with acid alcohol(†).

(9) Transfer the residue to a weighed platinum dish by means of small amounts of water, evaporate to dryness, heat in an oven at 105° C. until of constant weight, and weigh.

(10) Ash at red heat, cool, and weigh.

The coaly matter, or free carbon as it has been named in the tables, is given by the difference in weight between the residues from Stages 9 and 10.

It is of interest to note that in the case of coal miners the analysis of the ash of the coaly matter separated from the lungs approximates very closely to that of the original coal in regard to the free and combined silica content.

(*) Alcoholic potash : Potassium hydroxide, 20 grammes; water, 300 millilitres; alcohol (95 per cent.), 600 millilitres
(†) Acid alcohol : Hydrochloric acid, 100 millilitres; water, 200 millilitres; alcohol (95 per cent.), 600 millilitres.
‡ In some cases it is necessary to add 0·5 millilitre of oleic acid.

NOTES ON THE VARIOUS GROUPS.

Coal-miners, New South Wales.

Pneumonokoniosis at a stage later than early occurs in our New South Wales coal-miners with a pure industrial history, when there is an accumulation of coal-dust in the lungs which, estimated as free carbon, is about fifty or more milligrams per gram of dried lung.

In only two lungs, Nos. 43 and 78, did the figure fall below this, when it was 35 and 23·4 mg. per gram of dried lung respectively.

The figure for free silica in cases of pneumonokoniosis in New South Wales coal-miners is generally very low, excepting in those cases where there is a history of work with a definite exposure to free silica, as in case No. 12, but cases Nos. 31 and 78 form exceptions for which no special reason can be advanced. In other cases, free silica ranged from 0·32 to 3·9 mg. per gram of dried lung, whereas in Sydney sandstone workers it was with one exception, case No. 33 (for which a special reason is advanced), from 2·6 to 11·5 mg. per gram of dried lung. Of special interest is the figure for combined silica in the Southern coal-field; this is very high, 7·7 to 10·8 mg. per gram of dried lung, akin to that of metalliferous miners. In the Western and Northern coal-fields, the figure for combined silica is much lower.

A study of the chemical analyses of the lungs of coal-miners from our three fields indicates that the characteristic, perivascular, nodular fibrosis found in them has mostly arisen from the aggregation of coal-dust, estimated as free carbon in the lungs. This aggregation may have resulted from some primary action of free or combined silica, but against this view is the fact that the typical whorled nodule of the silicotic lung, first formed in the distal alveolar portion of the lung, is rarely seen in these coal-miners' lungs. This fact, combined with the very small amount of free silica found in some lungs, markedly pneumonokoniotic, sometimes not larger than that found in some normal lungs, leads us to the reasonable belief that coal-dust, as distinct from a minimal amount of free or combined silica it may contain, is capable of producing the fibrotic changes seen in some coal-miners' lungs.

The occurrence of emphysema is a very striking feature in lungs affected by pneumonokoniosis associated with the perivascular deposition of coal-dust cells and their disintegration. Emphysema is not commonly found in our pneumonokoniotic lungs except in the presence of coal-dust and it, rather than the fibrosis, is the disabling factor in the dust fibrosis of coal-miners.

Southern Field Coal-miners.

There are eight lungs from the Southern coal-field, of which seven show well-developed pneumonokoniosis. The lungs from this field are characterised by the large amount of combined silica which they contain, the small amount of free silica and the great quantity of coal-dust as shown by the carbon figure.

Despite the marked development of pneumonokoniosis in this group, only five of these lungs show free silica in an amount above that which may be found in the lungs of individuals not exposed to dust inhalation in their work.

In case No. 12, where 4·7 mg. of free silica per gram of dried lung was found, there is a history of sinking a colliery shaft in sandstone. Cases Nos. 67, 70 and 78, which yielded respectively 2·2 mg., 2·40 mg. and 4·85 mg. of free silica per gram of dried lung, worked in pits other than the Metropolitan. In cases Nos. 12, 13, 22, 62 and 65, there is a history of work wholly or largely at the Metropolitan pit. All but one, No. 13, with the smallest working history, have well-developed dust fibrosis. Only two, Nos. 12 and 78, have an amount of free silica in the lung that could be associated with a silicotic fibrosis, and in No. 12 there is a history of sandstone work as mentioned before—in both these lungs there is tuberculosis. The lungs of cases Nos. 22, 62 and 65 are loaded with combined silica and carbon. In cases Nos. 22, 65 and 78, nodular fibrosis has been described as partly of the siliceous type, that is, the nodules have a whorled appearance such as typically occurs in fibrosis from free silica, but there occurs also perivascular fibrosis and nodulation of the coal-dust type, and this latter type is chiefly seen in case No. 65. Cases Nos. 67 and 70, from Southern coal-field pits other than the Metropolitan, show a little free silica, but exhibit fibrosis of the coal-dust type, while case No. 78 from the same pits has much free and combined silica and little coal-dust.

In the Southern coal-field lungs, therefore, the pneumonokoniosis can generally be related to the combined silica and the very large amount of carbon present; as in other fields large amounts of coal-dust, determined as carbon, appear to be provocative of fibrosis, we do not exculpate coal-dust from being a causal agent in the production of the fibrosis seen in some of these lungs despite the large amount of combined silica present. Three of these lungs were tuberculous, Nos. 12, 65 and 78, and in four of the eight lungs, emphysema was a marked feature.

The amount of free silica in samples of coal from the following Southern field pits, analysed by the Department of Mines, is as follows :—

Metropolitan Colliery.—Taken in No. 6 place, second left Western area, the seam being 9 ft. 4 in. thick, clean coal. Free silica = 0·43 per cent.

South Bulli Colliery.—Taken at the face of the inbye cut through off the right back heading in No. 9 right district. Seam 9 ft. 4 in. thick, clean coal. Free silica = 0·41 per cent.

Mount Kembla Colliery.—Taken at the face of the main heading tenth left district. Seam 6 ft. 4 in. clean coal. Free silica = 1·41 per cent.

Western Field Coal-miners.

Seven cases are placed in this group and, of these lungs, five show well-developed pneumonokoniosis of the coal-dust type. The lungs of a coal-miner of this field when affected by dust fibrosis show a high carbon figure and, in comparison with the Southern field lungs, a small amount of combined silica, but more free silica. In the Southern coal field with the large carbon figure and small amount of free silica, there is found a large amount of combined silica which it is not possible to exculpate as a cause of the fibrosis present; but, in the Western coal field, the lungs of coal-miners affected by dust fibrosis contain with one exception, small amounts of both free and combined silica, and it is reasonable to believe that the great amount of coal-dust found in these lungs has, in the majority of the cases, been the cause of the fibrosis present which has the pathological appearance of what we call the " coal-dust type " of fibrosis. Emphysema was present in all these lungs except No. 66, which showed only very slight dust changes.

Northern Field Coal-miners.

The industrial histories of nine cases have enabled their inclusion in this group, which has been subdivided into sub-groups belonging to the Upper and Lower coal measures. The Upper coal measures are related to the measures of the Southern and Western coal fields.

The number of lungs which have been studied is probably not sufficient to enable one to make valid generalizations.

Of these nine cases, only three are classified as definite pneumonokonioses, a moderate degree of fibrosis being present, and these three lungs have emphysema, two of these lungs contain high amounts of coal-dust, determined as carbon, and two relatively high amounts of free and combined silica.

The lungs from this field appear to have been exposed to less coal-dust than the lungs of the Southern and Western coal fields, while the amount of free and combined silica inhaled appears to correspond more with the Western than the Southern coal field.

Coal-miners, British and Australian.

Of the eight lungs in this group, it is significant that the two showing the largest amounts of carbon provide the only cases of well-marked pneumonokoniosis, and moreover, that in both, the amount of free silica is small. There is a history in both cases of work in Lanarkshire, Scotland, mines for over twenty years and a similar period in New South Wales coal fields; while it is impossible to estimate the effect of work in the Scottish mines, nevertheless both these cases resemble those developing in New South Wales mines. The other cases in this group call for no special comment, excepting case No. 28, where, despite the relatively large amounts of free and combined silica, the early fibrotic changes present are of the coal-dust type.

Miners, Coal and Metalliferous.

The lungs of nine individuals are placed in this group. Of these, five showed definite to massive fibrotic changes which could, owing to the pathological changes, be related to work in metalliferous mines before coal mining was done. The remaining four lungs in this group showed only minor degrees of fibrosis, and that of the perivascular coal-dust type, but No. 3 had also a few silicotic nodules and a little silicotic consolidation.

The first point of interest comes from the fact that following work in coal mines ranging from eight to twenty-three years, there was very little coal-dust in the lungs of five individuals, cases Nos. 5, 10, 39, 41 and 61, whose lungs showed fibrosis of the silicotic and not of the coal-dust type. This fact causes us to doubt the accuracy of the opinions of others that a fibrosis caused by free silica results in the banking up of inert dusts in the lungs; in fact, from analyses and observations, the contrary result seems more likely: given a lung the lymphatics of which are already the site of a silicotic fibrosis, then it would appear that the entry of coal-dust cells to the perivascular lymphatics is no longer possible. This observation, however, does not deal with the reaction to coal and silica which reach the lymphatics at the same time.

Two of the lungs of this group, Nos. 3 and 35, contained an amount of free silica that could be found with a well-established fibrosis, but this was absent. The analysis of the lungs of case No. 35 is of particular interest on account of the length of work in coal mines and the long absence from such work before death.

The second point of interest relates to the absence of emphysema in this group of lungs, except in those lungs where there is a large amount of coal-dust (Nos. 7 and 35). The occurrence of emphysema in most of our cases of pneumonokoniosis is apparently related, either directly or indirectly, to the perivascular aggregation of coal-dust.

Metalliferous Miners.

The lungs from eleven individuals have been placed in this group; in ten of them, the dust fibrosis is well-developed or massive, and of these ten cases, overt tuberculosis was present in nine and latent tuberculosis in one. This high incidence of tuberculosis is due partly to the fact that these lungs came from inmates of a tuberculosis sanatorium. The individuals from whom the lungs came, were miners, none of whom had an industrial history of work in only one mine or field. Their work was most varied; quartz reef-mining in Western Australia, Victoria, New South Wales and New Zealand and other types of metalliferous mining in various Australian States, where there was probably more exposure to the dust of silicates than free silica. Owing to this varied terrain of work, the characteristic dust fibrosis of any one field is not apparent.

The figure for free silica is high except in the case of a Broken Hill miner where there is four times as much silicate.

For a proper appreciation of the chemical analyses of these lungs so that a correlation might be attempted between the minerals found in the lungs and the place of work, it would require a much more detailed industrial history than it is often possible to obtain, and, even with this, the varying mineralogical nature of the reefs or lodes worked and the country rock encountered, not only in different fields but often in the same field in different mines, renders such an appreciation of the chemical analyses impossible. It will be sufficient to record, as has been done, the industrial history as accurately as possible and to hope that the publication of these figures will lead to the examination of lungs of individuals with pure industrial histories, particularly in fields such as Mt. Lyell (Tasmania), Broken Hill (New South Wales), Kalgoorlie (Western Australia), Bendigo (Victoria) and Cobar (New South Wales) where high silicate figures may be expected.

While emphysema is such a marked feature of our coal-miners lungs, rarely being absent from a lung showing well-marked pneumonokoniosis due to coal-dust, it is absent in the lungs of our metalliferous miners; emphysema is not found in any of the eleven lungs despite the fact that fibrotic consolidation is always present and is often gross.

Sydney Sandstone and Metalliferous Miners.

There are four lungs in this group. The men from whom they came worked in sandstone of recent years but had an earlier metalliferous mining history. Two of the lungs showed tuberculous changes, one had non-tuberculous cavitation of a large consolidation in each upper lobe and another had a highly contracted, fibrotic, right upper lobe with no evidence of tuberculosis.

Though there is only an old and often vague history of metalliferous mining many years before undertaking sandstone work, these lungs all contained amounts of combined silica absorbed at this metalliferous mining work; for very little combined silica is found in the lungs of sandstone workers who have not done metalliferous mining work. It is assumed by some that silica, free and combined, and coal-dust taken into the lungs will be eliminated by solution or migration; the amounts of these dusts, found in some of our series of lungs many years after leaving work where they were inhaled, cause us to believe that only a minor part of such dust ever leaves the lungs.

Sydney Sandstone Workers.

Eight lungs are placed in this group, they come from men who had a pure industrial history of work in sandstone as masons, sewer-miners or rock-choppers, except in the case of No. 24 who also worked as a stonemason in basalt for some years.

The free silica in the lungs ranged from 1·14 to 11·45 mg. per gram of dried lung, while the combined silica is low and only in a mason, who had worked in basalt for some years, does it exceed 3 mg. per gram of dried lung. In Sydney sandstone workers with pulmonary fibrosis from 5 to 10 mg. of free silica per gram of dried lung may be expected. Where a large consolidation, which is nearly always in the upper lobe, has rotted away, the amount of free and combined silica may be much decreased (Case No. 33) from that found in lungs without cavitation: for in fibrotic lungs, the dust is chiefly present in the fibrotic consolidations and nodules. Tuberculosis was present in all but one of these lungs; emphysema in only one.

Miscellaneous Group.

Of the five lungs placed in this group, two call for special comment. No. 9, from a foundry dresser who worked in annealing pots, cleaning them with a percussive tool, showed appearances pointing to non-tuberculous cavitation of a large, upper lobe consolidation and smaller non-tuberculous cavities in other consolidations. A similar cavitation has been described in case No. 81 who did sandstone work and was also a metalliferous miner. The second case that calls for comment is No. 20: these lungs came from an ore miller who was exposed to dense clouds of finely crushed silica and various other dusts including ferric oxides. Here there was massive consolidation and perivascular fibrosis in a lung pigmented by red ferric oxide, and the nodular character of the siliceous fibrosis is masked by the generalised perivascular fibrosis. The consolidation which is gross and wide-spread, developed in less than eight years from unusual exposure to a variety of dusts. This gross exposure allowed the accumulation in the lungs of enormous amounts of free and combined silica; the dried lung contained probably six per cent., an amount several times greater to our knowledge than any previously recorded in the analyses of lungs fibrosed by dust.

Classifications of Cases of Pulmonary Dust Fibrosis.

Silicosis.	*Stages of Development.*	
Where the fibrosis presents the pathological appearance of the siliceous nodule or consolidation and where, on analysis, the free silica is more than the combined silica.	Early	A few fibrotic nodules, nearly always in the upper lobes, with or without small consolidations.
	Moderate	Many fibrotic nodules, chiefly in the upper lobes, with or without small consolidations.
	Marked	More numerous fibrotic nodules, especially in the upper lobes, with or without consolidations.
	Massive	Fibrotic consolidations have largely taken the place of fibrotic nodulation.
Pneumonokoniosis (Siliceous Type).		
Where the fibrosis presents the pathological appearance of the siliceous nodule or consolidation and where, on analysis, the free silica is less than the combined silica.	Early	A few fibrotic nodules, nearly always in the upper lobes, with or without small consolidations.
	Moderate	Many fibrotic nodules, chiefly in the upper lobes, with or without small consolidations.
	Marked	More numerous fibrotic nodules, especially in the upper lobes, with or without consolidations.
	Massive	Fibrotic consolidations have largely taken the place of fibrotic nodulation.

CLASSIFICATION OF CASES OF PULMONARY DUST FIBROSIS—*continued.*

Pneumonokoniosis (Coal-dust Type).	*Stages of Development.*	
Where the fibrosis presents the pathological appearance of the perivascular fibrosis of the coal-dust type with nodulation or consolidation and where, on analysis, the free carbon is high.	Very Early	This fibrosis is associated with the perivascular lymphatic aggregation of cells containing coal-dust or coal-dust liberated from such cells, without the formation of irregular nodules of the coal-dust type.
	Early	Where the perivascular fibrosis has developed a little irregular fibrotic nodulation, chiefly in the upper lobes.
	Moderate	Where the perivascular fibrosis has developed irregular fibrotic nodules, chiefly in the upper lobes.
	Marked	Where the perivascular fibrosis of all lobes has developed irregular nodulation, with or without small consolidations.
	Massive	Where fibrotic consolidations have largely taken the place of perivascular nodulation.

SUMMARY.

1. Of the seventy-six lungs dealt with in this publication, sixty-nine came from workers in various dusty occupations, and, of these, sixty-two were affected by varying degrees of pneumonokoniosis whilst seven were unaffected.

2. Five lungs came from individuals dead of tuberculosis and having had no known dust exposure, and two from individuals not exposed to dust.

3. Of coal-miners' lungs, there are thirty-two; metalliferous miners, eleven; sandstone workers and miners, eight; and of miners who had done both coal and metalliferous or sandstone work, thirteen; together with a small group of miscellaneous workers in dusty occupations.

4. These lungs are described and classified following pathological examination and chemical analysis (including the separation of free and combined silica) by a classification based on pathological and chemical findings and they have been grouped according to the industrial history which has been carefully recorded.

5. It is concluded from the examination of the data given that "coal dust," as distinct from a minimal amount of free and combined silica it may contain, is capable of producing the fibrotic changes seen in some coal-miners' lungs.

6. Contrary to generally accepted opinion, it is suggested that the entry of coal dust and probably other dusts into a lung already affected by pulmonary fibrosis, is small and may be negligible as a cause of increase of existing fibrosis.

7. The chief disabling factor in the pulmonary fibrosis of coal-miners in New South Wales is shown to be emphysema, and it is considered that this is more often secondary to fibrosis than to bronchitis, which appears to be accepted as the incapacitating factor in European and American coal-miners.

8. Comparison with the results of chemical analyses of lungs by various authors is made, and the ambiguity resulting from the use of the term "total silica" in different senses is stressed, and the need for some standard method of analysis emphasised.

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REPORTS OF CASES IN VARIOUS GROUPS.

COAL MINERS, SOUTHERN COAL FIELD.

Cases Nos. 12, 13, 22, 62, 65, 67, 70, 78.

Case No. 12.—The patient was a coal-miner, aged fifty-two. Two years before death he complained of shortness of breath for some years, pleurisy of a few weeks' duration, night sweats, cough with sputum and loss of weight. Clinically, bronchial breathing was present in both upper lobes, with crepitations. The radiograph shows massive consolidation of the right upper lobe and smaller consolidations in the left upper and lower lobes. There is a pneumothorax at the apex of the left upper lobe, with generalized fine fibrosis and a centrally placed heart. He worked in a slate quarry in England for eleven years. He was a miner in the Southern coal-field for three years at the Mt. Kembla Colliery and the Metropolitan Colliery for twenty-one years prior to his death. He worked for three years in headings through sandstone and shale.

Post-mortem.—The right lung is covered with adhesions, which are very massive over the upper lobe. The lung is generally blackened. The whole of the upper lobe is consolidated and the site of a very large area of cavitation and of mutilation due to tearing of adhesions. The cavitation appears in part tuberculous. Where the consolidation has not been eaten away, it is dense, black and rubber-like. The glands show areas of commencing caseation. They are large; some are hard and some soft. The bases of the lower lobe show areas of whitish consolidation, probably tubercuIous bronchopneumonic patches. The lower lobe shows about a dozen fibrotic nodules from two to ten millimetres in diameter, chiefly sub-pleural.

The left lung shows marked adhesions, particularly over the upper lobe, which has a large consolidation involving its greater part. This is the site of a cavitation. At its apex is a small area of soft tissue with numerous pin-head areas of caseation. The cavitation ramifies through the area of consolidation. There are a few fibrotic nodules in the lower lobe. The coal-dust cell aggregation in the lower lobe is not nearly so marked as that of the upper lobe. The area of soft tissue with pin-head areas of caseation shows on section tuberculous tissue and tubercle bacilli.

Under the dissecting microscope the consolidations appear to be mainly siliceous in character, while the perivascular fibrosis and fibrotic nodules are of the coal-dust type.

Sections.—Sections show massive fibrosis of the siliceous and coal-dust types with tuberculosis.

Chemical Analysis.—Ash	... ...	52·9 mg.	per gram of dried lung.
Combined silica...	... ...	10·6 mg.	,, ,,
Free silica	... ...	4·7 mg.	,, ,,
Carbon	... ...	85·0 mg.	,, ,,

Diagnosis.—Pneumonokoniosis both siliceous and coal-dust types, massive and tuberculosis.

Case No. 13.—The patient was a coal-miner, aged fifty-four. He died at work. The radiograph shows a very minor degree of fine fibrosis. He worked in a London underground for four years tunnelling through clay. He worked as a miner in the Southern coal-field, Metropolitan Pit, for sixteen years.

Post-mortem.—There was atheroma of the coronary arteries sufficient to account for sudden death. The right lung is generally blackened, with adhesions of the base. There are no fibrous nodules or consolidations. Perivascular aggregation of coal-dust cells is not unduly marked. There is no evidence of pleural drift. The left lung presents similar characteristics.

The dissecting microscope shows perivascular fibrosis of the coal-dust type with early nodulation.

Sections.—Sections show perivascular fibrosis of the coal-dust type with early nodulation.

Chemical Analysis.—Ash	... ...	37·0 mg.	per gram of dried lung.
Combined silica...	... ...	8·4 mg.	,, ,,
Free silica	... ...	0·60 mg.	,, ,,
Carbon	... ...	90·0 mg.	,, ,,

Diagnosis.—Pneumonokoniosis, coal-dust type, very early.

Case No. 22.—The patient was a coal miner, aged fifty-two. The cause of death was a failing heart. The radiograph shows generalized coarse nodular fibrosis with consolidations in the upper and lower lung field of both sides. He worked for thirty-four years in the same Southern field pit, the Metropolitan, twenty-eight years as a miner at the face, two years as a wheeler, and four years on the surface at the screens. Reference Figs. III, IV, V ([15]).

Post Mortem.—The lungs are generally blackened, with small adhesions and well marked bullae in the upper lobes. In the right lung very hard subpleural nodules and thickening are palpable on the pleural surface. There is a consolidation about three centimetres in diameter in the upper portion of the upper lobe. It is composed of separate nodules. Distributed throughout the lung are nodules up to five millimetres in diameter. In the lower lobe these are chiefly subpleural. There is a nodular consolidation at the base of the right upper lobe. The lung is very emphysematous.

In the left lung there is a large area of consolidation at the upper part of the upper lobe. It is made up of a large number of loosely aggregated nodules. Excepting in the lower lobe, the development of fibrous nodules in the lung is very marked. There is also a large consolidation made up of a fusion of a number of separate nodules at the base of the right upper lobe. The subpleural position of many of the nodules is similar to that described for the right lung. The perivascular aggregation of coal-dust cells is gross in both lungs.

There was no evidence of tubercuIous infection. The glands are black, soft and not enlarged.

Under the dissecting microscope the appearance of this coal-miner's lung is unusual. There is well-developed perivascular fibrosis of the coal-dust type with the irregular nodulation characteristic of that type but there are also numerous nodules of the siliceous type and these are, except in the consolidations, sharply marked off from the surrounding tissue and very easily shelled out from the lung substance. Related to the perivascular fibrosis is well-developed emphysema.

Sections.—The sections show marked perivascular fibrosis of the coal-dust type with nodulation and emphysema, the fibrotic nodules, separately and in aggregations, frequently show the typical whorled siliceous structure but are laden with dust cells containing coal dust.

Chemical Analysis.—Ash	88·5	mg. per gram of dried lung.	
Combined silica...	10·2	mg.	,, ,,
Free silica	0·32	mg.	,, ,,
Carbon	111·8	mg.	,, ,,
Calcium Oxide	26·75	mg.	,, ,,

Remarks.—This lung is of very great interest on account of the pure industrial history—work in one pit on the Southern coal field. The great development of large fibrotic nodules of the silicotic type and the fact that the chemical analysis showed no more free silica than is to be found in a normal lung, but a large amount of combined silica and coal-dust may be explained by regarding these fibrotic nodules as siliceous nodules caused by combined and not by free silica. The large amount of calcium found in the lungs suggests a calcification factor.

Diagnosis.—Pneumonokoniosis, siliceous and coal-dust types, marked and emphysema.

Case No. 62.—The patient was a coal-miner, aged 66. He worked for thirty-six years as a coal-miner and on the screens. He was at Mt. Keira for thirteen years and Metropolitan for fourteen years and on the screens for nine years. These collieries are in the Southern coal field. He ceased work seven years before his death, complaining of shortness of breath, pains in the chest and cough. He was emaciated, the chest expansion was 1 inch, there was dullness in the interscapular region, with diminished breath sounds. His arteries were thickened and tortuous. The radiographer reported that there was a well-established pneumonokoniosis with areas of consolidation in both lower lobes, suggesting the probability of a superimposed tubercular infection. Seen by a Medical Board five years later, he was very emaciated and feeble; breath sounds were harsh, but absent at the left base. The radiograph showed well-marked fibrosis throughout each lung with areas of consolidation in the upper lobes and upper portion of the lower lobes. The left diaphragm was elevated, with heart displacement to the right. He was found drowned.

Post Mortem. Right Lung.—The lung is very black. Adhesions are well-developed over the posterior surface of the apex of the upper lobe. The upper lobe is very emphysematous and has a large number of small black fibrotic nodules and an irregular consolidation toward the base. This consolidation measures 3 x 6 x 3 cm. and has areas of necrosis filled with gelatinous fluid. The middle lobe has an irregularly shaped consolidation 3 x 3 x 4 cm., and this lobe has numerous small fibrotic nodules, 2 to 5 mm. in diameter and well-developed emphysema. The lower lobe has an irregular consolidation 3 x 3 x 5 cm. and also fibrotic nodules and emphysema.

Left Lung.—The lung is blackened and has adhesions fairly marked over the posterior surface of the lower lobe and some scarring of the apex of upper lobe. On section, there is a large somewhat irregular area of consolidation at the base of the upper lobe from 3 to 5 cm. in diameter. There are also smaller consolidations 1 cm. in diameter in relation to it and a large number of fibrotic nodules of a few millimetres diameter. The lower lobe has in its upper part a consolidation about 4 to 5 cm. in diameter with anthracotic cavitation. The cavities are filled with colloid substance. There are a lesser number of fibrotic nodules than in the upper lobe. Both lobes are very emphysematous. The glands are black, not very enlarged, and not very hard.

The dissecting microscope shows perivascular, nodular and massive fibrosis of the coal-dust type with emphysema.

Sections.—Sections show nodular perivascular fibrosis of the coal-dust type with gross emphysema. There is no evidence of tuberculosis.

Chemical Analysis.—Ash	67·37	mg. per gram of dried lung.	
Combined Silica	10·80	mg.	,, ,,
Free Silica	0·86	mg.	,, ,,
Carbon	234·0	mg.	,, ,,

Remarks.—This case is of very great interest, for there is a pure industrial history of work only in the Southern field collieries. The pneumonokoniosis which has resulted from his work is gross. The amount of coal-dust which is in the lungs, despite the fact that he had left work for seven years before he was accidently drowned, is huge. The chemical analysis shows a minimal amount of free silica in the lungs and a very large amount of combined silica. The amount of fibrosis appears far too great to be related only to the small amount of free silica present. These lungs may be compared with Case No. 65.

Diagnosis.—Pneumonokoniosis, coal-dust type, massive and emphysema.

Case No. 65.—The patient was a coal-miner, aged 61. He died from tuberculosis and pneumonokoniosis. He worked for six years in Northern field collieries and for the last thirty-four years at the Metropolitan Colliery, Southern field. He ceased work three years before he died, complaining of shortness of breath, cough and loss of weight. He coughed up pints of inky fluid teeming with tubercle bacilli. His radiograph showed fine, diffuse, bilateral fibrosis with consolidations in the upper lobes, more marked on the right side where there appeared to be cavitation.

Post-mortem.—The right lung is large and covered generally with adhesions, and a large cavity of the upper lobe has been exposed by tearing of adhesions. On section, the upper lobe has almost disappeared by tuberculous excavation. The middle lobe is a consolidation showing a nodular basis and areas of early tuberculous caseation. The lower lobe has generalized, large, black, fibrotic nodules with areas of commencing tuberculous caseation. The glands were black and soft, with areas of early caseation.

The left lung presents a different appearance to the right. There are few adhesions, the whole lung is greyish-black, with a few sago grains in the upper lobe. On section, the upper lobe has a general development of black, fibrotic nodules and a few consolidations—one near apex is 2 cm. in diameter, and one lower is 5 x 3 cm. in size. This lobe shows well-developed emphysema and there are a few small areas showing early tuberculous caseation. The base of the upper lobe shows very marked emphysematous changes with black, fibrotic nodules and small areas of consolidation showing tuberculous changes. The lower lobe has in its upper part well-developed, fibrotic nodules and definite emphysema and a few small areas of tuberculous caseation.

The dissecting microscope shows fibrosis of the coal-dust type and tuberculous caseation with some development of whorled nodules of the siliceous type and emphysema.

Sections.—The sections of both lungs show nodular, perivascular and massive fibrosis of the coal-dust type, also whorled nodules of the siliceous type with gross tuberculous changes and emphysema.

The heart is not enlarged. There is definite atheroma in the aorta and some atheroma at the origin of the right coronary and less at the origin of the left coronary. There is some atheroma in the left coronary. There is a fibroid patch in the wall of the left ventricle. The changes are probably not sufficient to cause death.

Chemical Analysis.—

Ash	... ...	...	48·26 mg.	per gram of dried lung.	
Combined silica	... ...	8·15 mg.	,,	,,	
Free silica	... ...	1·00 mg.	,,	,,	
Free carbon	... ...	108·0 mg.	,,	,,	

Remarks.—The chemical analysis of this lung is of the same order as found in lungs 12, 13, 22 and 62 from the same pit. The amount of fibrosis appears far too great to be related only to the small amount of free silica present—the silicate and carbon figures are very large.

Diagnosis.—Pneumonokoniosis, coal-dust type, massive and tuberculosis.

Case No. 67.—The patient was a coal-miner, aged 61. He died from peritonitis. He worked for forty years in Southern field collieries, principally Mt. Kembla and South Clifton, and at the South Clifton Colliery for six years before he ceased coal-mining, eight years before his death. Seen by a Medical Board seven years before his death, he complained of shortness of breath on exertion and debility. The chest expansion was 1½ inches, the breath sounds diminished at both bases. There was dyspnoea and tachycardia. The radiographer reported: "Early mottling of the right upper lobe due to early tuberculosis, bilateral increase in the linear markings of the lungs but not sufficiently dense to warrant a diagnosis of pneumonokoniosis." Six months later, the same radiographer reported, on comparing the present films of the man's chest with those taken earlier, a definite increase of the markings had taken place in the right middle lobe and at the apex of the right lower lobe, and that the appearances are those of fibrosis secondary to tubercular infection. At a hearing before the Workers' Compensation Commission eight years before his death, the medical evidence given stated that he had bronchitis and emphysema, and that coal-dust, at work, aggravated his cough. His sputum was examined for tubercle bacilli, which were not found.

He was then examined in hospital for tuberculosis, but no evidence of this could be found, and his reactions to tuberculin and the van Pirquet tests were negative.

He remained incapacitated for work by cough and shortness of breath until his death from peritonitis.

A radiograph, taken four years before death, showed a great increase in lung markings. There was a generalized, fine fibrosis with a fourfold increase in the size of a consolidation in the middle of the right lung field. This radiograph, we could, with our increase of knowledge, now interpret as marked anthracosis with a consolidation in the right lung, and not accept as showing any evidence of tuberculosis.

Post-mortem—Right Lung.—There is a very large bulla at the apex—5 cm. in diameter and smaller bullae beneath this in the upper lobe and a large one near the free edge of the lower lobe. The lung is generally blackened with few adhesions. On section, the emphysema is gross. In the upper lobe, there are two large consolidations, one about 4 cm. in diameter, very black and rubbery. There is a smaller one beneath it. There are large and small black, fibrotic nodules present in the gross emphysematous tissue of the upper and lower lobes. The whole lung is intensely black and intensely emphysematous. The glands are not very enlarged, and are black and soft.

Left Lung.—This lung presents similar characteristics, but the bullae of the upper lobe are not quite so well-developed. There are two consolidations, 1½ and 1 cm. in diameter, and also smaller consolidations present.

The dissecting microscope shows fibrosis of the coal dust type with gross emphysema.

Sections.—The sections show a nodular and perivascular fibrosis with consolidations of the coal-dust type with gross emphysema. No tubercle bacilli were found in the sections.

A guinea-pig inoculated with the substance of the tracheo-bronchial gland did not develop tuberculosis.

Heart.—The right coronary has a patch of atheroma near its origin and the walls are thickened. The left coronary walls are thickened and it is tortuous and has two patches of atheroma in the descending branch.

The heart is not enlarged; very early atheroma is present at the base of the aorta.

The degree of atheroma is probably not more than the average atheroma for a man of his age.

Chemical Analysis.—Ash	45·10 mg.	per gram of	dried lung.
Combined silica...	7·70 mg.	,,	,,
Free silica	2·22 mg.	,,	,,
Free carbon	134·0 mg.	,,	,,

Diagnosis.—Pneumonokoniosis, coal-dust type, massive and gross emphysema.

Case No. 70.—The patient was a coal-miner, aged 68. He worked all his life in the Southern field at Old Bulli, Scarborough and Coalcliff. He ceased work after an accident two years before his death which was caused by coronary thrombosis.

Post Mortem.—The lungs are very black and shiny, being free from adhesions, but having a few fibrotic areas on the surface resembling sago grains. The left lung is very emphysematous with moderate to marked perivascular fibrosis with nodulation of the coal-dust type and generalised oedema. The upper lobe of the right lung has a fibrotic consolidation 4 x 2 x 2 cm. and moderate to marked perivascular fibrosis with nodulation of the coal-dust type. All three lobes show marked emphysema.

The dissecting microscope shows perivascular nodular and massive fibrosis of the coal-dust type with marked emphysema and serous oedema.

Sections.—Sections show marked perivascular fibrosis with nodulation of the coal-dust type and emphysema with serous oedema of the left lung.

Chemical Analysis.—Ash	59·0 mg.	per gram of	dried lung.
Combined Silica	10·42 mg.	,,	,,
Free Silica	2·40 mg.	,,	,,
Carbon	122·0 mg.	,,	,,

Diagnosis.—Pneumonokoniosis, coal-dust type, marked and emphysema.

Case No. 78.—The patient was a coal-miner, aged 59. He worked in the Southern coal field at Corrimal Colliery for three years, and at South Bulli for ten years, and Coalcliff sixteen years. He ceased work about a year before his death complaining of bronchitis, cough and loss of weight. Seen by a Medical Board six months before his death, it was noted that his nutrition was poor. There was cyanosis of the legs and clubbing of the finger-nails. Chest expansion was 1½ inches, the percussion note generally was dull, with tubular breathing at the right apex, and crepitations of the right base and the vocal fremitus was increased. The radiograph showed "advanced fibrosis in both lungs with superadded tuberculosis of the right lung and cavitation." The Medical Board found, "He was totally incapacitated by pulmonary fibrosis associated with tuberculosis."

Post-mortem. Right Lung.—The right lung is covered by gross adhesions. It is very bulky. All the lobes are consolidated. On section, the whole of the upper lobe is a massive, greyish-black, fibrotic consolidation, with a more or less greyish nodular basis. This has been excavated and there is a large tuberculous cavity. The middle lobe is a consolidation with a nodular basis—the nodules are fairly discrete, ranging from 2 to 10 mm. in diameter—some of them are caseous. The lower lobe has a large, greyish-black consolidation with a nodular basis and the rest of the lobe is filled with large nodules and a little tuberculous caseation and some emphysema and perivascular coal-dust cell aggregation. The glands are large, black, hard and some are calcified.

Smears made from the lung showed tubercle bacilli.

Left Lung.—The lung is greyish-black. There are a few adhesions in the lower lobe and some sago grains over the upp r lobe. The upper lobe has a number of large, discrete, greyish-black, fibrotic nodules throughout and a moderate development of emphysema with perivascular coal-dust cell aggregation. The lower lobe has a number of fibrotic nodules from 3 to 10 mm. in diameter and a few small consolidations with caseation. There is a small amount of emphysema and perivascular coal-dust cell aggregation.

The dissecting microscope shows chiefly nodules and consolidations of the siliceous type and a little perivascular fibrosis and nodulations of the coal-dust type and some emphysema.

Sections.—The sections show nodules and massive fibrosis of the siliceous type and a little perivascular fibrosis of the coal-dust type.

Chemical Analysis.—Ash	53·1 mg.	per gram of	dried lung.
Combined Silica	8·04 mg.	,,	,,
Free Silica	4·85 mg.	,,	,,
Free Carbon	23·35 mg.	,,	,,

Remarks.—The pathological appearances and the chemical analysis of these lungs are consistent with a pneumonokoniosis resulting from free and combined silica. The free silica 4·85 mg. per gram of dried lung, is more than twice the amount found in other Southern field coal-miners whose lungs have been examined excepting in one with a history of working in headings of sandstone and shale. The combined silica is of the same order as that found in other coal-miners of this field. The carbon figure is very low, being only one quarter of that found in other coal-miner's lungs of this group.

This lung is classified as pneumonokoniosis of the siliceous type—*i.e.*, according to our classification, a fibrosis presenting the pathological appearance of the siliceous nodule and where, on analysis, the free silica is less than the combined silica. The low carbon figure suggests that the silica, free and combined, has not resulted from the inhalation of coal-dust *i.e.* the dust of coal-measures, but rather of the dust of mineral strata associated with coal-measures.

Diagnosis.—Pneumonokoniosis siliceous type massive and tuberculosis.

COAL-MINERS.
WESTERN COAL FIELD.

Cases Nos. 27, 29, 57, 63, 66, 73, 76.

Case No. 27.—The patient was a coal-miner, aged 62. The cause of death was pneumonia. The radiograph shows coarse fibrosis with a large area of consolidation in the left upper lobe and a small area in the right. He worked in Western field collieries for thirty years and for twenty-one years he worked in the Hermitage Pit, and ceased work three years before he died. Reference Fig. VIII ([15]).

Post Mortem.—The left lung is intensely black. There are greyish-white areas on the surface of both upper lobes, the sites of flattened subpleural consolidations. The upper lobe has at its apex an area of consolidation four centimetres in diameter, largely excavated by non-tuberculous anthracotic cavitation. There are a number of fibrotic nodules one to two millimetres in diameter. The upper portion of the lower lobe has many nodules two to five millimetres in diameter and emphysema. The glands are black and soft, and not enlarged.

In the right lung the upper and middle lobes are massive and oedematous, with pneumonic consolidation. The apex shows small consolidations with sub-pleural plaques with cavitation. Nodules of two to five millimetres in diameter are present throughout the upper part of the lung. There are a number of small fibrotic nodules one to two millimetres in diameter, mostly sub-pleural. The glands are black, soft, and not enlarged.

The dissecting microscope shows emphysema, pneumonia and perivascular fibrosis nodulation and consolidation of the coal dust type. Some of the larger nodules and consolidations have anthracotic cavitations.

Sections.—Sections showed perivascular and sub-pleural fibrosis of the coal dust type with many nodules and consolidations, anthracotic cavitation, emphysema and pneumonia.

Chemical Analysis.—

Ash	23·8 mg.	per gram of dried lung.
Combined silica...	0·90 mg.	,, ,,
Free silica	1·3 mg.	,, ,,
Carbon	96·0 mg.	,, ,,

Diagnosis.—Pneumonokoniosis, coal dust type, marked and emphysema.

Case No. 29.—The patient was a coal-miner, aged 71. The cause of death was cardiac disease. He died at work. Auricular fibrillation was diagnosed ten days before death, and he was advised not to return to work. He had pneumonia and bronchitis one year before death. He did surface work at Cobar copper mines for three years, and he was prospecting in various goldfields for seven years. He was shaft sinking at Lucknow (serpentine) for one year. He worked for twenty-six years at a Western field colliery (Hermitage). Reference Fig. IX, X ([15]).

Post-mortem.—The right lung is very black. There is a large consolidation like black india-rubber in the upper lobe, with an early degree of anthracotic cavitation. There are a large number of fibrotic nodules two to three millimetres in diameter in the upper lobe, which is intensely black. Sub-pleural plaques of consolidation are present.

The left lung is intensely black. There are sub-pleural plaques and a large consolidation in the upper lobe which shows early non-tuberculous anthracotic cavitation. There are fibrotic nodules at the periphery of the consolidation, and the rest of the upper lobe contains a large number of fibrotic nodules two to three millimetres in diameter. The lower lobe has a small area of consolidation at its apex and a small number of fibrotic nodules in its upper part.

The dissecting microscope shows perivascular fibrosis with nodulation and consolidation of the coal-dust type—the larger nodules and consolidations have anthracotic cavitation, and emphysema is present.

Sections.—Sections show well-developed perivascular nodular and massive fibrosis of the coal-dust type and emphysema.

Chemical Analysis.—

Ash	32·4 mg.	per gram of dried lung.
Combined silica...	1·5 mg.	,, ,,
Free silica	2·1 mg.	,, ,,
Carbon	81·5 mg.	,, ,,

Diagnosis.—Pneumonokoniosis, coal-dust type, massive and emphysema.

Case No. 57.—The patient was a coal-miner, aged 51 years. He worked for thirty years in various Western field collieries at Lithgow and Kandos. Eighteen months before his death he left work complaining of shortness of breath, cough and debility. Six months before his death it was noted that his chest expansion was from 33 to 35 inches, and the chest was resonant on percussion, that the breath sounds were diminished all over the chest, the expiratory sounds were prolonged and rhonchi were heard at the right apex; the blood pressure was 150 systolic/100 diastolic. The arteries were thickened and cardiac dullness was diminished. His response to an exercise test was fair, but after exercise he was slightly cyanotic. There

was clubbing of the finger nails. There was no albumin in the urine. The radiograph showed a coarse nodular type of fibrosis in each lung. For three weeks before his death he could only sleep in an upright position, and he had oedema of the feet three days before he died.

Post-mortem.—The right lung is covered with adhesions very well developed except over portion of the lower lobe. On section, the upper lobe is generally blackened, the middle and lower lobes less so. The whole of the upper lobe shows very well-developed emphysema with numerous fibrotic nodules of the coal-dust type, mostly small, but many are 5 or 6 mm. in diameter. The lower and middle lobes show the same characteristics, but the emphysema and perivascular fibrosis with nodulation of the coal-dust type is less marked. The glands are enlarged, black, and not very hard, and have necrotic centres.

The left lung presents similar characteristics. The adhesions are not so well developed, and there is some pneumonic consolidation at the base.

The dissecting microscope shows well marked fibrosis of the coal-dust type, but in the upper lobes the emphysema and perivascular fibrosis is very well developed. The nodules up to 6 mm. in diameter are mostly contiguous. The lower lobes show emphysema, with much less marked perivascular fibrosis and nodulation.

The heart weighs 400 g. and has a greater deposition of fat than is usual, the myocardium of the right and left ventricles shows fibroid changes to the naked eye; the posterior cusp of the mitral valve is thickened, and the edge beaded. There are two small patches of atheroma in the descending branch of the left coronary and a small ring patch of atheroma at the mouth of the right coronary. Sections of the heart muscle show a slight increase of fibrotic tissue.

Sections.—Show gross perivascular fibrosis with nodulation and massive fibrosis both of the coal-dust type with gross emphysema and pneumonia.

Injection of Guinea Pigs.—Guinea pigs were injected with gland substance from either lung, but did not develop tuberculosis.

Chemical Analysis.—Ash	38·0	mg. per gram of dried lung.	
Combined silica...	2·51	mg.	,, ,,
Free silica	2·10	mg.	,, ,,
Free carbon	55·0	mg.	,, ,,

Remarks.—The characteristic feature of these lungs is emphysema with marked fibrosis of the coal-dust type and large nodulations generalised in the upper lobes, but not so well developed in the lower. Owing to the Industrial History, this lung is a useful example of the pulmonary fibrosis produced by work in the Western coal field. Injection of guinea pigs showed that tuberculosis was not a factor in causing the lung fibrosis present.

Diagnosis.—Pneumonokoniosis, coal-dust type, marked, with well-developed emphysema.

Case No. 63.—The patient was a coal-miner, aged 50. He worked for fifteen years in the Western field collieries at Lithgow, twelve years in the State Coal Mine and three years in the Cobar Colliery. Between the ages of 18 and 25 he worked in a fire-clay mine in Scotland. Three months before his death he was injured by falling on a skip, and died after an abdominal section.

Post-mortem—Right Lung.—The lung is covered with adhesions which are very dense in the pericardial area. On section, the lung tissue is not very much blackened, there is a little perivascular aggregation of coal-dust cells and some emphysema. There are no definite fibrotic nodules and no consolidations. The glands are soft and not enlarged.

Left Lung.—This lung presents a similar appearance. The dissecting microscope shows slight perivascular aggregation of coal-dust cells and emphysema.

Sections.—Sections show slight perivascular fibrosis of the coal-dust type and emphysema.

Chemical Analysis.—Ash	49·0	mg. per gram of dried lung.	
Combined silica...	4·90	mg.	,, ,,
Free silica	1·00	mg.	,, ,,
Carbon	28·50	mg.	,, ,,

Diagnosis.—Emphysema.

Case No. 66.—The patient was a coal-miner, aged 41 years. He worked in the Western coal field for about twenty years, at Oakey Park and the Vale of Clwydd Collieries. It is believed that he also worked in a Northern coal field for three years.

Post-mortem.—Apart from an increase of blackened areas on the pleural surface the lungs show no departure from normal.

The dissecting microscope shows slight perivascular aggregation of coal-dust cells.

Sections.—Sections show very slight perivascular fibrosis with coal-dust cell aggregation and pneumonia.

Chemical Analysis.—Ash	21·15	mg. per gram of dried lung.	
Combined silica...	0·30	mg.	,, ,,
Free silica	0·68	mg.	,, ,,
Carbon	7·0	mg.	,, ,,

Diagnosis.—Pneumonia.

Case No. 73.—The patient was a coal-miner, aged 57. He worked in the Western coal field, for sixteen years in a Lithgow colliery, and for eleven years in the State Coal Mine. About four years before his death he complained of shortness of breath and cough, and ceased work two years before he died. Seen by a Medical Board two years before his death, he was considered to have a non-incapacitating pulmonary fibrosis. Seen by the same Board about eight months later, he was considered unfit for work, owing to debility and a partially incapacitating pulmonary fibrosis. Seen two months before his death by the same Board, he was found to have a general coarse tremor and acrocyanosis

The radiograph showed an early stage of pulmonary fibrosis, and the right dome of the diaphragm was considerably raised. This appearance was queried as being due to hydatid in the liver, subphrenic abscess or diaphragmatic paralysis. The Medical Board recommended clinical investigation of this abnormality. The hospital records state that he complained for several weeks of breathlessness and "asthma" on exertion, and that this was much more marked four or five days before admission. On admission, the patient was cyanosed with rapid respiration and orthopnoea, pulse weak and slightly irregular. There were marked crepitations at both bases of the lungs. The finger tips and toes were cyanosed, and the ankles oedematous. He continued cyanosed with distressed respiration with no continued elevation of temperature until he died six days after admission. The hospital post-mortem notes state :—

Lungs—Right.—Free fluid in pleural cavity, slightly blood-stained. Two pleural adhesions, not very tough. Lung shows no gross consolidation, some venous congestion and is markedly infiltrated with coal-dust. No localized areas of other disease.

Left.—Three pleural adhesions which divided easily with the finger. Macroscopic appearance similar to right lung.

Heart.—Some lymph deposited on visceral pericardium over both atria. No pus or adhesions. No excess fluid. Heart generally enlarged. Coronary arteries not abnormally thickened.

Post-mortem Examinations of Lungs and Heart.—The right lung is generally blackened, there are no obvious adhesions excepting between the middle and upper lobe. The base of the lower lobe is consolidated, apparently pneumonic. On section of the lung, there is well-developed emphysema with a moderate development of perivascular fibrosis with nodulation. The lower lobe shows definite pneumonic consolidation and a less development of perivascular fibrosis and nodulation, the middle lobe shows pneumonic changes, and in other respects is similar to the lower lobe. The glands are small, black and soft.

Under the dissecting microscope, there is moderately developed perivascular fibrosis, with nodulation of the coal-dust type and emphysema and patches of pneumonia.

The left lung shows similar characteristics.

The heart is enlarged and weighs 16 ounces. The right side of the heart is dilated. There is no evidence of disease of the coronary arteries.

Sections.—Sections show a moderate development of perivascular and nodular fibrosis of the coal-dust type with marked emphysema and congestion of the hilar regions and bases of the lungs.

Chemical Analysis.—Ash	26·30 mg.	per gram of dried lung.	
Combined silica	2·02 mg.	,,	,,
Free silica	0·71 mg.	,,	,,
Free carbon	84·50 mg.	,,	,,

Remarks.—In these lungs there is a moderate development of nodular perivascular fibrosis of the coal-dust type with marked emphysema, which was probably caused by the pulmonary fibrosis. The heart is enlarged and the right side is dilated. These changes are compatible with a failing heart, and can be associated with the pulmonary fibrosis and emphysema. There is congestion of the bases and hilar regions of the lungs.

The chemical analysis resembles that of three other lungs with pneumonokoniosis from the Western field. There is very little free silica or combined silica, and a large amount of free carbon.

Diagnosis.—Pneumonokoniosis, coal-dust type, moderate and emphysema.

Case No. 76.—The patient was a coal-miner, aged 56 years. He worked on the Western coal-field in the Oakey Park Coal Mine for seventeen years, and had previously been in the Cobar Tunnel pit for one and a half years, the rest of his life was spent in rural work. Three or four years before his death, he was short of breath, and had been given the privilege of working in the old men's section. On the day of his death, he was on his way out of the colliery when he grabbed at his heart region, cried out with pain, and died. Nine months before his death, a radiographer reported "pulmonary fibrosis in an early stage."

Post-mortem.—No abnormality was detected apart from the condition of the heart and lungs.

Heart.—There is a marked atheroma at the bases of the cusps of the aortic valve, and the descending branch of the left coronary is solid with atheroma. The other coronaries all show marked atheromatous changes.

Right Lung.—The right lung is generally blackened. There are some adhesions and a consolidation at the apex. On section, the upper lobe has two black fibrotic consolidations, roughly 2 cm. and 1 cm. in size. There is also a slight to moderate degree of perivascular fibrosis of the coal-dust type. The lower lobe shows a slight to moderate degree of perivascular, nodular fibrosis of the coal-dust type, and the middle and basal portion of this lobe has well-developed emphysema.

Left Lung.—The left lung presents a similar appearance, but there are no consolidations. The glands are soft and black.

Under the dissecting microscope, the lungs show a slight to moderate degree of perivascular fibrosis with nodulation with, in some parts, well-developed emphysema.

Sections.—Sections show perivascular and nodular fibrosis of the coal-dust type, with some development of emphysema.

Chemical Analysis.—Ash	52·4 mg.	per gram of dried lung.	
Combined silica...	3·96 mg.	,,	,,
Free silica	3·87 mg.	,,	,,
Free carbon	88·2 mg.	,,	,,

Remarks.—The cause of death was cardiac failure following gross atheroma of the coronary arteries. It is doubtful if there was sufficient pulmonary fibrosis and emphysema to aggravate materially the cardiac disease present.

Diagnosis.—Pneumonokoniosis, coal-dust type, moderate, and emphysema.

COAL-MINERS.

NORTHERN COAL FIELD.

CASES NOS. 1, 4, 6, 31, 32, 43, 48, 59, 60.

Case No. 1.—The patient was a coal-miner, aged 56. He died as the result of an accident. He had no known disability. He had been a coal-miner in the Northern coal field for thirty-five years. He worked for eight years at the Burwood and for eighteen years prior to his death at the Old Lambton Colliery. Both these pits are in the Upper Coal Measures.

Post Mortem.—The lungs are slightly blackened. There is some perivascular aggregation of coal-dust cells in the upper lobes. There is no nodular fibrosis or consolidation. The glands are greyish black, soft and not enlarged.

Sections.—The sections show early perivascular and sub-pleural fibrosis of the coal-dust type with well-marked emphysema.

Chemical Analysis.—Ash	... ...	29·0 mg.	per gram of dried lung.
Combined Silica	... ...	6·6 mg.	,, ,,
Free Silica	... ...	0·98 mg.	,, ,,
Carbon	... ...	16·2 mg.	,, ,,

Diagnosis.—Pneumonokoniosis, coal-dust type, very early and emphysema.

Case No. 4.—The patient was a coal-miner, aged 77. He died at work. It is known that he worked in the Northern coal field for 29 years. He worked at Waratah, Old Glebe and Burwood for seven years and Old Glebe for the last twenty-two years. All these pits are in the Upper Coal Measures.

Post Mortem.—There was pleurisy with effusion, chronic nephritis and a dilated heart. The lungs are blackened, large bullae and well-marked adhesions are present. There is marked emphysema; perivascular deposition of coal-dust cells and fibrosis is not marked.

The dissecting microscope shows early perivascular fibrosis of the coal-dust type and gross emphysema.

Sections.—The sections show some perivascular fibrosis of the coal-dust type with gross development of emphysema.

Chemical Analysis.—Ash	... ...	36·2 mg.	per gram of dried lung.
Combined Silica	... ...	2·9 mg.	,, ,,
Free Silica	... ...	0·90 mg.	,, ,,
Carbon	... ...	28·0 mg.	,, ,,

Diagnosis.—Pneumonokoniosis, coal-dust type, very early and gross emphysema.

Case No. 6.—The patient was a coal-miner. His age was unknown. He died while at work and had no known disability. He worked in a Northern field colliery for twenty years. (Abermain, Greta Measures.)

Post Mortem.—Examination revealed general atheroma of the arteries and a dilatation of the right side of the heart, which was considered to be the cause of death. The lungs are blackened. A giant bulla, the size of a small fist, is present in the upper lobe of the right lung, with several smaller, but still very large, bullae. A number of pinhead, white areas are present on the surface of the upper lobe. The apex of the upper lobe has puckered areas with a number of small, irregular, black nodules, three to five millimetres in diameter, and gross emphysema. There is a definite pleural drift of dust cells with sub-pleural, thin, black plaques and emphysema. The lower lobe shows few changes. The glands are soft and black. The left lung shows similar changes.

The dissecting microscope shows perivascular fibrosis with early nodulation and emphysema.

Sections.—Sections show perivascular and sub-pleural fibrosis of the coal-dust type with early nodulation and well-developed emphysema.

Chemical Analysis.—Ash	... ...	30·4 mg.	per gram of dried lung.
Combined silica	... ...	1·1 mg.	,, ,,
Free silica	... ...	1·5 mg.	,, ,,
Carbon	... ...	50·0 mg.	,, ,,

Diagnosis.—Pneumonokoniosis, coal-dust type, very early and emphysema.

Case No. 31.—The patient was a coal-miner, aged 57. The cause of death was coronary occlusion. The radiograph showed fine fibrosis with small apical consolidations. There is a history of attacks like asthma. He was born in Scotland and began work at the age of 9 years. He worked in hard headings until 15 years of age. He worked at Borehole, Seaham and Minmi Collieries (Upper Coal Measures) and at Hepburn and Abermain (Lower Coal Measures), Northern coal field for twenty-five years.

Post-mortem.—The aorta and coronary arteries showed a condition of gross atheroma sufficient to account for his sudden death. In the right lung, a consolidation is found at the apex, with a diameter of three centimetres, which joins with a sub-pleural consolidation two millimetres thick; this extends for several centimetres. The upper lobe shows a perivascular aggregation of coal-dust cells and, except at the very apex, the soft lung tissue is greyish. The middle lobe has a few flattened sub-pleural nodules; the lower lobe shows few changes. In the left lung, the upper part of the upper lobe shows a sub-pleural thickening or consolidation up to five millimetres in thickness, which extends over an area of a few centimetres and shews several minute anthracotic cavitations. There are also a few other sub-pleural nodules and about half the upper lobe is covered with sub-pleural consolidation one millimetre thick. The lower lobe shows a marked sub-pleural aggregation of coal-dust cells with development in the upper part of the lower lobe of sub-pleural consolidation extending over some centimetres and being one millimetre in thickness, together with a deeper irregular area of consolidation about thirty by five millimetres.

The dissecting microscope shows perivascular and nodular fibrosis of the coal-dust type.

Sections.—Sections show well-developed perivascular nodular and massive fibrosis of the coal-dust type and emphysema.

Chemical Analysis.—Ash ... ... 24·0 mg. per gram of dried lung.
Combined silica... ... ... 4·3 mg. ,, ,,
Free silica ... ... 5·2 mg. ,, ,,
Carbon ... ... 67·5 mg. ,, ,,

Diagnosis.—Pneumonokoniosis, coal-dust type, moderate and emphysema.

Case No. 32.—The patient was a coal-miner, aged 45. He died suddenly at work of chronic myocarditis. He worked for twenty-four years in the Stanford Merthyr, Pelaw Main and Richmond Main Collieries, lower coal measures, Northern field. In his youth, he worked in the steel-works.

Post-mortem.—The heart showed chronic myocarditis and the aorta was atheromatous. The lungs are dark grey and show no definite abnormality.

Sections.—Sections show emphysema and no dust changes. There was very little coal dust in the few dust cells.

Chemical Analysis.—Ash ... ... 23·0 mg. per gram of dried lung.
Combined silica... ... ... 0·90 mg. ,, ,,
Free silica ... ... 2·00 mg. ,, ,,
Carbon ... ... 7·50 mg. ,, ,,

Remarks.—As there is a history of pit-work in the Northern collieries only, during the working life, these results are of local value and demonstrate the small amount and nature of the dust which a miner's lungs may acquire in these pits. There is no macroscopic nor microscopic fibrosis nor even an accumulation of dust cells.

Diagnosis.—No abnormality.

Case No. 43.—The patient was a coal-miner, aged 66 years. He worked in the Northern field and he was never a metalliferous miner. He worked in the Catherine Hill Bay Colliery for three years, in the Abermain Colliery for the same period and the Richmond Main Colliery for fifteen years prior to his death. He did railway and road construction for seven years. The rest of his life was spent farming.

He claimed compensation for dust disease of the lungs. This was not granted by the Commission as it was considered that he was chiefly suffering from cardiac disease.

The radiograph showed a moderate, generalized, fine to nodular fibrosis with definite perivascular fibrosis, an increase in density in the hilar regions and an enlarged heart.

Post-mortem.—The right lung is covered with adhesions which are massive over the upper part of the upper lobe. There are large emphysematous bullae of the apex and lower part of the upper lobe. On section, the upper lobe has a moderate amount of perivascular fibrosis with a small amount of nodulation of the coal-dust type. Emphysema, apart from the bullae, is moderate in amount. The lower lobe has less perivascular fibrosis and nodulation.

The left lung presents a somewhat similar appearance but there are but few adhesions and no emphysematous bullae. The glands, which are not enlarged, are black and soft.

The dissecting microscope shows in both lungs a moderate degree of perivascular fibrosis with nodulation of the coal-dust type and a moderate degree of emphysema.

The heart weighed 470 grams and had considerable deposition of fat. The mitral valve cusps were thickened with some atheroma, the aorta showed some atheromatous changes and its cusps were thickened.

The heart showed some fibroid changes of the muscle which was hypertrophied in the left ventricle. The right coronary shewed a large nodule of atheroma at its origin in the aorta and this encroached on the orifice to a considerable extent. This artery was tortuous along its course and its walls were thickened and atheromatous. The left coronary had thickened walls and was atheromatous.

Sections.—Sections show perivascular fibrosis with nodulation of the coal-dust type with emphysema.

Chemical Analysis.—Ash ... ... 49·10 mg. per gram of dried lung.
Combined silica... ... ... 7·45 mg. ,, ,,
Free silica ... ... 2·82 mg. ,, ,,
Free carbon ... ... 35·0 mg. ,, ,,

Remarks.—This lung may be regarded as typical of the coal-miner's lung of the Northern field. The development of perivascular fibrosis and nodulation is not great, but it appears to be the factor which is responsible for the development of emphysema. The total of the free and combined silica is over 1 per cent. of the dry lung. These lungs form a useful comparison with cases 59 and 60 as examples of conditions produced by the work in the Northern field.

Diagnosis.—Pneumonokoniosis, coal-dust type, moderate and emphysema.

Case No. 48.—The patient was a coal-miner, aged 50. He worked in the Northern field and as a metalliferous miner at Inverell for one year. He worked in the Richmond Main Colliery for thirteen years before his death by accident and, before that, in Burwood Extended and Stanford Merthyr Collieries for two and one years respectively.

Post-mortem.—The lungs show no abnormality apart from a little pleural coal-dust cell aggregation and very mild perivascular fibrosis of the upper lobes.

The dissecting microscope shows a little perivascular coal-dust cell aggregation.

Sections.—Sections show very slight perivascular fibrosis.

Chemical Analysis.—Ash ... ... 30·5 mg. per gram of dried lung.
Combined silica... ... ... 2·07 mg. ,, ,,
Free silica ... ... 5·25 mg. ,, ,,
Free carbon ... ... 14·00 mg. ,, ,,

Remarks.—This lung is an interesting example of the dust that may accumulate in a miner with an almost pure Northern field history. The amount of free and combined silica (0·7 per cent.) is all that is found in some seriously affected lungs but exists here with no abnormality.

Diagnosis.—No abnormality.

Case No. 59.—The patient was a coal-miner, aged 56. He had been employed in the Northern coal field at Newcastle and South Maitland collieries since the age of 14. He worked in the Aberdare Colliery for twenty-seven years. He complained of increasing dyspnoea for some years and had become more and more weak and anaemic looking over ten years. On clinical examination, he had marked emphysema and some scattered rales and rhonchi. The percussion note was not noticeably altered; he was thin and anaemic.

Post-mortem.—The lungs were greyish, due to general adhesions.

Right Lung.—The upper part of the upper lobe has a large emphysematous bulla, 7 x 4 cm. The lower lobe is bulky and consolidated. On section, the upper lobe is very emphysematous with a fibrosis due to aggregation of coal-dust cells in the perivascular tissues: nodules are not obvious. In the lower lobe situated sub-pleurally on the lateral aspect, there is an abscess: contiguous to this abscess is a greyish consolidation of the lateral half of the lower lobe extending to the base. In the unconsolidated portion, there is definite emphysema with coal-dust fibrosis but no nodules to the naked eye. The middle lobe has marked emphysema but there is some greyish unaffected lung substance. On section, the glands show ramifying white tissue.

Under the dissecting microscope all three lobes show well-developed emphysema and a perivascular fibrosis of the coal-dust type with early nodulation and generalized carcinoma.

Sections.—The sections of all lobes show perivascular fibrosis of the coal-dust type with some nodulation and well-developed emphysema. The right lung is everywhere invaded by groups of carcinomatous cells, chiefly columnar in type. These cells are mainly found in small groups around the bronchi, and many bronchi are packed with solid masses of tumour cells. The whole consolidation of the lower lobe is carcinomatous. The condition appears to be one of carcinoma arising from bronchial epithelium.

Left Lung.—This presents similar appearances to the right lung, including an apical bulla, but no cancer cells are found in the sections of this lung.

Chemical Analysis.—Ash	27·75 mg.	per gram of dried lung.
Combined silica...	0·31 mg.	,, ,,
Free silica	1·42 mg.	,, ,,
Free carbon	70·5 mg.	,, ,,

Remarks.—These lungs are chiefly characterized by the well-developed emphysema of the upper lobes without gross coal-dust fibrosis and the large carcinoma of the right lung. The chemical analysis has a local value as this patient had a pure Northern field history.

Diagnosis.—Pneumonokoniosis, coal-dust type, early, gross emphysema and primary bronchial carcinoma.

Case No. 60.—The patient was a coal-miner, aged 53 years. He worked in the Northern field and was never a metalliferous miner. He worked in the Abermain Colliery for many years and, before that, in some of the Newcastle district mines. He had been in receipt of compensation for bronchitis and emphysema. He had a cough with breathlessness on exertion which became greater before his death, when he had not worked for over two years.

The radiograph shows a generalized fine fibrosis more evident in the lower half of the lung fields.

Post-mortem.—The right lung is generally blackened. There is a very large bulla, which measures 10 x 10 x 3 cm. in the upper lobe. This bulla is crossed by numerous very fine trabeculae. There is a large amount of emphysema and perivascular fibrosis with a small amount of nodulation. The bases of the lower lobe are very emphysematous and this lobe is similar in appearance to the upper lobe, but the perivascular fibrosis is not so marked. Under the dissecting microscope there is seen perivascular fibrosis of the coal-dust type, nodulation and emphysema with small areas of unaffected lung tissue.

The left lung is generally blackened. In the upper lobe is a giant bulla and emphysema similar to that found in the right lung. The lower portion of this lobe is partly consolidated. A consolidation in the lower lobe is apparently pneumonic. The glands are black and soft.

Under the dissecting microscope, in the upper lobe of the left lung, is seen perivascular fibrosis with nodulation which reaches a stage of small areas of consolidation in the lower portion. The emphysema is very marked. There are, however, areas of lung which are unaffected.

Sections.—The sections show perivascular fibrosis with nodulation of the coal-dust type and well-marked emphysema. In the left lung there is also hypostatic pneumonia.

Chemical Analysis.—Ash	29·50 mg.	per gram of dried lung.
Combined silica...	1·03 mg.	,, ,,
Free silica	0·06 mg.	,, ,,
Free carbon	68·50 mg.	,, ,,

Remarks.—This lung may be regarded as a typical coal-miner's lung. The disabling condition has been emphysema. The development of perivascular fibrosis, nodulation and consolidation is not very great, yet it appears to be the factor which is responsible for the development of emphysema. The relatively small amounts of free and combined silica are comparable with those found in Case No. 59 and certainly suggest that there is something apart from silicon compounds which produces pulmonary fibrosis.

Diagnosis.—Pneumonokoniosis, coal-dust type, moderate and emphysema.

COAL-MINERS.

BRITISH AND AUSTRALIAN COAL FIELDS.

Cases Nos. 2, 8, 11, 28, 49, 53, 72, 80.

Case No. 2.—The patient was a coal-miner, aged 56. He died as the result of an accident. He had no known disability. He worked in English collieries until 1911 and in Australian collieries from 1911 to 1931. His last pit was the Bellbird, Northern coal field, Greta Coal Measures.

Post-mortem.—The lungs are generally blackened. There is perivascular fibrosis in both lungs and the upper lobe of the right lung has a few cicatrices and fibrotic nodulation over an area of 5 sq. cm.

The dissecting microscope shows perivascular fibrosis of the coal-dust type with early nodulation.

Sections.—Sections show perivascular and sub pleural fibrosis of the coal-dust type with early nodulation and emphysema.

Chemical Analysis.—Ash ... ... 27·7 mg. per gram of dried lung.
Combined silica... ... ... 1·9 mg. ,, ,,
Free silica ... ... 0·52 mg. ,, ,,
Carbon ... ... 42·0 mg. ,, ,,

Diagnosis.—Pneumonokoniosis, coal-dust type, early.

Case No. 8.—The patient was a coal-miner, aged 54. He died suddenly; there was no history of disability. It was suggested that the cause of death was angina. He wore a mustard plaster in the precordial region. He came to Australia from England six years ago and worked in a Northern field colliery, Stockton Borehole, Upper Coal Measures, for six years before his death.

Post-mortem.—The right lung is generally blackened; there are no adhesions. A few doubtful sago grains are present in the pleura of the upper lobe. There are no nodules or consolidations. Perivascular aggregation of coal-dust cells is not marked. The glands are soft and black. The appearances of the left lung are similar.

The dissecting microscope shows perivascular fibrosis of the coal-dust type with very early nodulation.

Sections.—Sections show slight perivascular fibrosis with early nodulation.

Chemical Analysis.—Ash ... ... 37·5 mg. per gram of dried lung.
Combined silica... ... ... 2·4 mg. ,, ,,
Free silica ... ... 3·2 mg. ,, ,,
Carbon ... ... 74·5 mg. ,, ,,

Diagnosis.—Pneumonokoniosis, coal-dust type, very early.

Case No. 11.—The patient was a coal-miner, aged 48. He was electrocuted; he had no known disability. He worked in English collieries from 1896 to 1907. He worked in the Northern, Western and Southern coal fields for a period of twenty-three years. His last work was in the Northern field, upper coal measures, Cardiff Borehole pit for eleven years.

Post-mortem.—The right lung is greyish-black, with a few pleuritic adhesions of the upper lobe. The perivascular aggregation of coal-dust cells is not marked. The left lung presents similar appearances.

The dissecting microscope shows slight perivascular fibrosis.

Sections.—The sections show perivascular aggregation of coal-dust cells.

Chemical Analysis.—Ash ... ... 36·2 mg. per gram of dried lung.
Combined silica... ... ... 2·2 mg. ,, ,,
Free silica ... ... 0·69 mg. ,, ,,
Carbon ... ... 30·2 mg. ,, ,,

Diagnosis.—No abnormality.

Case No. 28.—The patient was a coal-miner, aged 65. He died suddenly at work; he had been treated for angina pectoris. He came from Scotland nine years before his death and worked in the Northern coal field. His last pit was Richmond Main (Greta Coal Measures).

Post-mortem.—Atheroma of the coronaries with thrombosis was found. The right lung is generally blackened. There are no fibrotic nodules present and no consolidation. The upper lobe shows much perivascular aggregation of coal-dust cells; in the lower lobe this was much less marked. The glands are soft and black. The left lung presents a similar appearance.

The dissecting microscope shows perivascular fibrosis of the coal-dust type with early nodulation and emphysema.

Sections.—Sections show perivascular fibrosis of the coal-dust type, nodulation not well-developed and emphysema.

Chemical Analysis.—Ash ... ... 56·5 mg. per gram of dried lung.
Combined silica... ... ... 11·0 mg. ,, ,,
Free silica ... ... 4·2 mg. ,, ,,
Carbon ... ... 72·5 mg. ,, ,,

Remarks.—Despite the relatively large amount of free and combined silica in these lungs, the small fibrotic changes present are of the coal-dust type.

Diagnosis.—Pneumonokoniosis, coal-dust type, very early and emphysema.

Case No. 49.—The patient was a coal-miner, aged 42 years. He had worked in coal mines for seven years in England and twenty years in the Northern coal field. There was no history of metalliferous mining. He died suddenly when at work and the cause of death was not ascertained.

Post-mortem.—Apart from presenting a light, greyish-black colour, the lungs appear normal. On section, the glands are black, soft, but not enlarged. There is some perivascular fibrosis and emphysematous tissue but no nodulation is seen.

The dissecting microscope shows a mild degree of perivascular fibrosis with emphysema.

Sections.—There is a very mild degree of perivascular fibrosis of the coal-dust type and some development of emphysema.

Chemical Analysis.—Ash ... ... 31·4 mg. per gram of dried lung.
Combined silica... ... ... 1·46 mg. ,, ,,
Free silica ... ... 4·80 mg. ,, ,,
Free carbon ... ... 23·00 mg. ,, ,,

Remarks.—This lung was chiefly remarkable because the amount of free and combined silica (0·62 per cent. of dry lung) found is associated with such a small degree of fibrosis.

Diagnosis.—Emphysema.

Case No. 53.—The patient was a coal-miner, aged 58 years. Before coming to Australia twenty-one years before his death, he worked for twenty-six years in Lanarkshire pits. He worked for twenty years in New South Wales collieries, for three years in Northern field and for seventeen years in Western field collieries at Lithgow. Five years before his death he became short of breath on doing heavy work. He ceased work six months before his death, which was due to pneumonia following an operation for hydrocele. Examined two months before his death, his chest measurement was 33/34¾ inches, the percussion note was resonant all over the chest, which was emphysematous, the breath sounds had no accompaniments, his tolerance test was good, and an examination of the circulatory system showed no abnormality. The radiograph showed a bilateral pulmonary fibrosis of the coal-dust type, with an area of consolidation on the left side near the axilla.

Post-mortem—Right Lung.—The lung is very black, and the lower lobe has some pneumonic consolidation of about two-thirds of its volume. On section, the chief characteristic of the lung is the great perivascular aggregation of coal-dust cells and a very marked degree of emphysema and pneumonic consolidation of the lower lobe. There are numerous, very fine, fibrotic nodules in the upper lobe. It is difficult to see these with the naked eye as the whole field of the lung is intensely black, but, under the dissecting microscope, it is observed that the lung tissue is composed of globular, dilated vesicles which have shiny, carbonaceous dust particles in their walls, and that numerous irregular nodules, shown on section to be fibrotic, filled in the spaces between them. The lung is highly emphysematous, and had marked nodular fibrosis of the coal-dust type. There is also well-developed subpleural consolidation. In the lower lobe the consolidation is of a pneumonic character, and there is considerably less development of emphysema and fibrotic nodules. There is also subpleural fibrotic consolidation 2 to 3 mm. in thickness.

Left Lung.—The lung is very black. The lower lobe, for about two-thirds of its volume, has pneumonic consolidation. At the base of the upper lobe, there is a consolidation roughly 8 x 3 x 3 cm., apparently with a nodular basis. A portion of this consolidation was used for guinea-pig inoculation, but the guinea pigs did not develop tuberculosis.

Under the dissecting microscope, sections of the lungs in various parts show numerous perivascular fibrotic nodules of the coal-dust type and areas of nodular consolidation, well-marked emphysema of the upper lobes and pneumonia of the lower lobes.

Judging by the emphysema and dust fibrosis, the respiratory function of the lungs was considerably diminished during life, and the onset of pneumonia would throw an intolerable burden on the already affected respiratory function of the lungs.

Heart.—The heart is small. There is a fairly large patch of atheroma on the ventricular surface of the anterior cusp of the mitral valve and patches of atheroma at the bases of anterior and right posterior aortic cusps. There is a small patch of non-occluding atheroma of the left coronary. There are small patches of atheroma at the commencement of the aorta. At the commencement of the descending branch of the left coronary, there is a non-occluding patch of atheroma. The right coronary had a little atheroma at the aortic origin. The atheroma present is not excessive for a man of fifty-eight.

Sections.—Sections show perivascular fibrosis with nodulation and massive fibrosis of the coal-dust type, with marked emphysema and pneumonia.

Chemical Analysis.—Ash	39·3	mg. per gram of dried lung.
Combined silica...	6·90	mg. ,, ,,
Free silica	1·73	mg. ,, ,,
Free carbon	150·0	mg. ,, ,,

Remarks.—The characteristic feature of these lungs is emphysema, fibrosis of the coal-dust type and areas of fibrotic and pneumonic consolidation. The amount of carbon in the lung is very large.

Diagnosis.—Pneumonokoniosis, coal-dust type, marked, and emphysema.

Case No. 72.—The patient was a coal-miner, aged 54. The cause of death is unstated. He worked in the coal mines in Lanarkshire, Scotland, for twenty-one years and in the metalliferous mines, Broken Hill, New South Wales, for six months and in the Southern coal field, New South Wales, at Coledale, Excelsior and Scarborough Collieries for twenty years.

A radiograph shows marked, generalized, fine to nodular fibrosis, with a very large consolidation in the right upper lung field.

Post-mortem—Right Lung.—The right lung is black, the contracted upper lobe is covered with adhesions and, all but a small part, is an extremely dense consolidation measuring 10 x 4 x 8 cm. On section, this consolidation is extraordinarily dense and black, with a few areas of necrosis which do not present the appearance of tuberculosis. The small part of the upper lobe, which remains unconsolidated, shows black, fibrotic nodulation and perivascular fibrosis of the coal-dust type. The middle and lower lobes show black, fibrotic nodulation and perivascular fibrosis.

Left Lung.—The left lung is generally blackened. On section, the upper lobe shows perivascular fibrosis with a large number of black, fibrotic nodules ranging from 1 to 5 cm. in diameter. There is a small subpleural consolidation near the apex. The lower lobe has a less development of perivascular fibrosis and nodulation in its lower part but an equal development in its upper part.

Emphysema is not marked in either lung. The glands are black and soft. There is no evidence of tuberculosis.

The dissecting microscope shows perivascular, nodular and massive fibrosis of the coal-dust type.

Guinea Pig Inoculation with gland substance and consolidation of the right lung did not cause tuberculosis.

Sections.—Sections show perivascular, nodular and massive fibrosis of the coal-dust type.

Chemical Analysis.—Ash	45·0	mg. per gram of dried lung.
Combined silica...	3·96	mg. ,, ,,
Free silica	1·90	mg. ,, ,,
Carbon	124·0	mg. ,, ,,

Remarks.—The small amount of combined and free silica present and the large amount of the carbon of coal-dust is noticeable.

Diagnosis.—Pneumonokoniosis, coal-dust type, marked.

Case No. 80.—The patient was a coal-miner, aged 70 years. The clinical cause of death has not been ascertained. He worked for thirty years as a coal-miner in Glamorganshire, Wales, and in New South Wales for eight years in the Southern field collieries, and for twenty years in the Western field collieries. Altogether he worked for fifty-eight years as a coal-miner. Seen by a Medical Board eighteen months and one year before his death, he was found to have a non-incapacitating pulmonary fibrosis together with gross cardio-vascular disease. He complained of cough, debility and dyspnoea for two or three years. The heart was greatly enlarged, the radial arteries thickened, B.P. 220/150. Chest expansion $\frac{3}{4}$ inch, wheezy respirations. The radiograph showed an early bilateral, nodular fibrosis, with enormous cardiac enlargement, and diffuse aortic enlargement, possibly aneurysmal.

Post-mortem—Right Lung.—The lung is moderately blackened, the surface is maculated. The upper and middle lobes have an early condition of perivascular fibrosis and nodulation of the coal-dust type. In the lower lobe, this condition is less ma ked

Left Lung.—The lung presents a similar appearance, but there is some pneumonic consolidation of the lower lobe.

The dissecting microscope shows perivascular fibrosis and nodulation of the coal-dust type.

Heart.—The heart is greatly enlarged and weighs 28 oz. Where the aorta has been cut through three inches from the valves, there is a mass of atheroma, the probable site of a ruptured aneurysm. There is well developed atheroma at the bases of the tricuspid valves. The coronaries are greatly thickened and markedly atheromatous.

Sections.—Sections show perivascular fibrosis and nodulation of the coal-dust type and pneumonic changes.

Chemical Analysis.—Ash	34·59 mg.	per gram of dried lung.	
Combined silica...	3·92 mg.	,,	,,
Free silica	2·10 mg.	,,	,,
Carbon	46·00 mg.	,,	,,

Remarks.—Despite the gross cardiac changes, it is improbable that the early fibrotic condition of the lungs in the absence of emphysema materially aggravated the cardiac disease or accelerated death.

Diagnosis.—Pneumonokoniosis, coal-dust type, early.

COAL AND METALLIFEROUS MINERS.

Cases Nos. 3, 5, 7, 10, 21, 35, 39, 41, 61.

Case No. 3.—The patient was a coal-miner, aged 59. He had also been a metalliferous miner and a steel-worker. He died by drowning, and had no known disability. He worked in the Northern coal field, Co-operative Colliery, Wallsend, Upper Coal Measures for seven years, at Cobar he was copper mining for eight years, and at th coal fields, Western Australia, for six years. After this for eight years at the gold fields in the Murchison and Black Range, Western Australia. He was employed at the steel-works for sixteen years before his death.

Post-mortem.—In the left lung generalized blackening is seen with sago-grains on the surface. The upper lobe has a small consolidation, which is 6 mm. thick, of the pleural region and extends over the surface of the lung. There are no definite nodules apart from sago-grains.

The right lung is generally blackened. Sago-grains are present in the lower and middle lobes. A small area of consolidation is seen at the apex of the upper lobe and another at the base of the lung.

Under the dissecting microscope the small consolidations show a silicotic nodular structure. There is some perivascular fibrosis with early nodulation of the coal-dust type, but some of the perivascular fibrosis is of the siliceous type.

Sections.—The sago-grains of the surface show, on section, a structure typical of sago-grains in silicotic lungs. The consolidations show typical, laminated nodules of silicosis, but are surrounded by areas of fibrous tissue, cellular and non-cellular, containing numerous coal-dust cells and occasionally masses of lymphoid tissue. The perivascular fibrosis is partly of the siliceous and partly of the coal-dust type.

Chemical Analysis.—Ash	63·0 mg.	per gram of dried lung.	
Combined silica...	7·2 mg.	,,	,,
Free silica	7·2 mg.	,,	,,
Carbon	15·0 mg.	,,	,,

Remarks.—This lung is of particular interest. It is reasonable to believe that the free and combined silica entered the lung during mining activities. At his death he had been sixteen years away from the mines yet the amount of silica and silicates in the lungs is very great, and is such that one would expect to find gross pulmonary fibrosis, but this is present only in moderate degree.

Diagnosis.—Silicosis, early.

Case No. 5.—The patient was a metalliferous and coal-miner, aged 50. The year before his death he had been completely disabled with dyspnoea and debility. Tubercle bacilli were not found in the sputum. A radiograph showed massive fibrosis of both lungs.

He was a surface worker in the Occidental Gold Mine (Cobar), New South Wales, for five years and a miner for seven years; he worked at the Gladstone copper mine (quartz), Cobar, as a miner for two years; at Ardlethan tin mines for one year, in a Western field colliery (Lithgow State), shaft sinking and general coal-mining, for nine years. From this history, it appears that this man was exposed to mine dust of silicates, with a varying percentage of free silica, for about nine years in Cobar and the Ardlethan mines. There followed then a period of shaft sinking in a Western colliery in which the shaft was sunk through sandstone for twenty-five feet. For three months he worked with dry drills in a sandstone drive, and for one year doing similar work with wet drills. There is thus a history of metalliferous mining for ten years, coal-mining and shaft sinking for nine years. Reference Fig. 1 ([15]).

Post-mortem.—The right lung is covered on the pleural surfaces with very dense adhesions. Outer portions of the lung are densely consolidated—the cuirass type of consolidation. On section, the whole of the upper lobe, except the medial lower portion, is of a greyish-black colour and rubbery consistence, and the consolidation shows no pattern. This consolidation extends as a sheath, one inch thick, over the middle and lower lobes on the outer aspects. The glands are dense, black and rubber-like. The left lung shows similar characteristics.

The dissecting microscope shows generalized, siliceous fibrosis with very little perivascular aggregation of coal-dust cells.

Sections.—The sections show massive consolidation of the siliceous type, together with nodular and perivascular fibrosis, of the siliceous type.

Chemical Analysis.—Ash ... ... 70·0 mg. per gram of dried lung.
Combined silica... ... ... 10·8 mg. ,, ,,
Free silica ... ... 16·0 mg. ,, ,,
Carbon ... ... 8·5 mg. ,, ,,

Remarks.—These lungs illustrate a fact that has been seen in other specimens—coal-dust does not appear to gain entrance to a lung already the seat of a siliceous fibrosis. The low carbon figure of the chemical analysis is in keeping with the microscopical examination.

Diagnosis.—Silicosis, massive.

Case No. 7.—The patient was a coal-miner and had been a metalliferous miner. He was 74 years of age. He died of infective cholangitis. He was born in Scotland, and worked in mines near Edinburgh. He came to Australia in 1884 and worked in the Northern field collieries until three years before his death. He worked for three years in gold mines in Western Australia. In all, he worked in mines for sixty years. He worked at Minmi (Upper Coal Measures) and finally at Richmond Main (Greta Measures) for forty-four years.

Post-mortem.—Examination revealed degenerative changes in arteries and infective cholangitis. The lungs are blackened; there is pneumonic consolidation of the lower lobes. There are no fibrous nodules nor fibrous consolidations of the lungs. There is a good deal of perivascular aggregation of coal-dust cells with some emphysema.

The dissecting microscope shows perivascular fibrosis of the coal-dust type, with nodulation and a little emphysema.

Sections.—Sections show perivascular fibrosis of the coal-dust type with nodulation and emphysema.

Chemical Analysis.—Ash ... ... 40·8 mg. per gram of dried lung.
Combined silica... ... ... 3·6 mg. ,, ,,
Free silica ... ... 0·7 mg. ,, ,,
Carbon ... ... 51·2 mg. ,, ,,

Remarks.—Despite an exposure of sixty years to the dust in many mines, only coal-dust accumulated in these lungs and it may be assumed that this human sampling gives an indication of the nature of the dust inhaled in the Northern coal field.

Diagnosis.—Pneumonokoniosis, coal-dust type, very early.

Case No. 10.—The patient had been a coal-miner and a metalliferous miner. He was 45 years of age. He had had recurrent attacks of bronchitis with pleurisy for the past ten years of his life. Repeated sputum examinations failed to reveal tubercle bacilli. The radiograph showed well-marked pneumonokoniosis. He died from cardiac failure two and a half years after leaving work with severe dyspnoea. He did timber cutting and bush work for some years. He was a surface worker at Mount Lyell for two years and at Bendigo gold mining for four and a half years. He was in the Northern field coal mining for a period of twenty-one years. He worked at Stanford Merthyr for eleven years and at Richmond Main for ten years. Both of these pits are in the Greta Coal Measures.

Post-mortem.—A partial right pneumothorax is present; the lungs are very bullous along the anterior margins, markedly adherent, with pleurisy and congested bases. The right lung is covered with adhesions and a few sago grains can be seen. The exterior of the upper lobe presents a ragged appearance, probably due to tearing of adhesions. The upper lobe is the site of an irregular consolidation involving nearly the whole lobe. The mutilation might, in part, be due to anthracotic cavitation. There are no areas of caseation; in the lower lobe, changes are much less marked. There were a few black nodules, one to two millimetres in diameter, in relation to the perivascular tissues. The left lung has well-developed adhesions; only a few sago grains can be made out at the base. There is a very large bulla at the margin of the upper lobe; there is an area of irregular consolidation in the lower part of the upper lobe; the apex of the lobe is puckered, fibrous and cystic. There are no nodules or consolidations in the lower lobe and the perivascular aggregation of coal-dust cells is not so marked. There is no evidence of tuberculous changes.

The dissecting microscope shows nodules and consolidations of the siliceous type, with remarkably small aggregations of coal-dust cells.

Sections.—Sections show massive fibrosis of the silicotic type with some whorled siliceous nodules.

Chemical Analysis.—Ash ... ... 55·5 mg. per gram of dried lung.
Combined silica... ... ... 14·3 mg. ,, ,,
Free silica ... ... 5·3 mg. ,, ,,
Carbon ... ... 13·2 mg. ,, ,,

Remarks.—This case illustrates the point that coal-dust does not appear to gain entrance to a lung already the seat of a siliceous fibrosis. Compare cases 5, 39, 41, 61.

Diagnosis.—Pneumonokoniosis, siliceous type, marked.

Case No. 21.—The patient was a coal-miner and a metalliferous miner, aged 49. He died from cerebral tumour. He worked at metalliferous mining at Broken Hill and Cobar, New South Wales, for 18 years, and as a coal-miner on the Western field for nine years.

Post-mortem.—The right lung is greyish-black. There are no fibrotic nodules and no consolidations. The glands are black, small and soft. The left lung is covered with adhesions. There are no consolidations and no fibrotic nodules. The glands are black and soft. There is very little perivascular coal-dust cell aggregation in these lungs.

The dissecting microscope shows perivascular fibrosis of the coal-dust type with a few siliceous nodules in the hilar regions.

Sections.—Sections show perivascular fibrosis and pneumonia.

Chemical Analysis.—Ash	54·7 mg.	per gram	of dried lung.
Combined silica...	6·1 mg.	,,	,,
Free silica	1·7 mg.	,,	,,
Carbon	9·8 mg.	,,	,,

Diagnosis —Pneumonia.

Case No. 35.—The patient was a coal-miner, aged 81 years. He worked in the coal mines of New South Wales from the age of thirteen years, excepting a period of three years when he worked in the Cobar Copper Mines. He ceased work fifteen years before he died of cardiac disease.

Post-mortem.—The lungs are covered with adhesions. On section, the perivascular aggregation of coal-dust cells is moderate, and is greater in the upper lobes. Coal-dust fibrotic nodules are not numerous. The glands are soft and not very greatly enlarged.

Under the dissecting microscope there is seen some perivascular fibrosis of the coal-dust type with occasional nodulation, also some subpleural fibrosis. The emphysema is marked.

Sections.—The sections show emphysema and subpleural and perivascular fibrosis of the coal-dust type, with early nodulation.

Chemical Analysis.—Ash	43·20 mg.	per gram	of dried lung.
Combined silica...	4·40 mg.	,,	,,
Free silica	3·05 mg.	,,	,,
Free carbon	43·50 mg.	,,	,,

Remarks.—The chief characteristics of these lungs is a moderate development of perivascular fibrosis, with some nodulation due to coal-dust, and emphysema.

The chemical analysis is of interest in view of the great length of time worked in the Northern field and the long absence from work before death, fifteen years.

Diagnosis.—Pneumonokoniosis, coal-dust type, early and emphysema.

Case No. 39.—The patient was a metalliferous and a coal-miner, aged 49. For the ten years before his death he had worked in the State Coal Mine, Lithgow, Western coal field. In view of the massive nature of the dust fibrosis, the clinical notes of his medical attendant are of special interest. He states :—

"I first saw this patient about eight (8) months ago. He consulted me on the possibility of his physical fitness to resume work on the renewal of activity of the State Mine.

"At the time he complained of slight dyspnoea on exertion with some cough in the early morning. He said his general physical health was sound in other respects. He gave a history of having worked in coal mines for a number of years, and that, previous to this, he had worked in metal mines.

"On examination, he had a few scattered rales and rhonchi in both sides of the chest, back and front. The vocal dyspnoea and resonance was slightly diminished over both lungs, and the chest note was generally dull without definite localised dullness. The heart response to exercise was good, and returned to normal in one minute. The respiration rate was increased after exercise for about three minutes. He said he felt capable of carrying on his usual work. Temperature was normal. I gave him a certificate which declared him fit for ordinary work. I advised him against seeking employment in a coal mine again. He did not wish to have a further radiograph of his chest or a sputum test.

"The patient had no occasion to consult me until the onset of his terminal illness, about one month ago. I was called to his home when he told me he had caught a chill. He then had a temperature of 99° F., a violent hacking cough with expectoration of only a slight amount of sputum and much dyspnoea. The attack was similar to one of ordinary asthma. The chest examination was as before, except that rales were more frequent and scattered.

"He failed to respond to treatment with usual asthma tinctures, digitalis, and brandy. His temperature became elevated to 101° F., and pulse rate increased. Dyspnoea became very marked, and he was unable to sleep. The chest showed definite signs of consolidation until towards the terminal stages when there was an increase in dullness with very fine rales at the base of the left lung at the back.

"During his illness, he had intermittent stages of fairly easy breathing, with only slight dyspnoea. At the end his heart began to fail, and the breathing was always labored. Death ensued about ten days after the onset of the acute attack."

Industrial History.—He worked at metalliferous mines at Badangora, Cambelligo and Cobar, New South Wales, doing trucking, feeding chutes, base work and hewing for twelve years. He worked in coal mines at Mt. Kembla, Southern field, Zig-Zag and State Mine, Western field for thirteen years.

Radiograph.—A radiograph taken two years before death showed generalized gross nodular fibrosis, with consolidations in the right lung. The left lung was the site of a massive consolidation which involved the whole lung, except the very apex and the base. Both right and left diaphragm were adherent, and the heart and aorta were drawn considerably to the left.

Post-mortem—Right Lung.—The lung is covered with adhesions. The upper lobe is grossly consolidated. The consolidation is massive, and occupies the medio-lateral half of the upper lobe. There is no obvious nodular basis. The rest of this lobe has perivascular fibrosis with nodulation. The middle lobe has perivascular fibrosis with nodulation. The lower lobe has an area of consolidation in its upper part with several smaller consolidations subpleurally. There is generalized perivascular fibrosis with nodulation. The glands are black, hard, and enlarged with necrotic centres. *In none of the lobes is there any emphysema.*

Left Lung.—The lung is covered with adhesions more marked over the consolidated areas. The whole of the upper lobe, with the exception of a small area at the base, is the site of a massive, hard, black consolidation. The small area at the base has large nodules, but there is no emphysema. The upper half of the lower lobe is also the site of a black, hard, massive consolidation with a few small anthracotic cavitations. The lower half of the lower lobe has a little nodular, perivascular fibrosis, and appears very white in contrast to the dense black portions owing to pneumonic consolidation. The glands are very large, hard and black. All have necrotic centres. *There was no emphysema in either lobe.*

In neither of these lungs is there any trace of tuberculous caseation.

Two-thirds of the left and one-half of the right lung are replaced by massive, hard, black, fibrotic consolidations.

The dissecting microscope shows fibrosis of the siliceous type.

Sections.—Sections show whorled nodules and nodular consolidations with pneumonia. The number of coal-dust cells and the deposition of coal-dust liberated from them is not great.

Chemical Analysis.—

Ash	51·3 mg.	per gram of dried lung.
Combined silica...	3·28 mg.	,, ,,
Free silica	11·65 mg.	,, ,,
Free carbon	12·50 mg.	,, ,,

Remarks.—These lungs are of particular interest, for, despite the fact that one-half of the right lung and two-thirds of the left lung exist only as a hard, black, rubber-like mass, nevertheless, the individual from whom they came, could do the ordinary work of a coal-miner until a few months before he died. The parts of the lung capable of respiratory function did not show any sign of emphysema. It appears reasonable to assume in pulmonary fibrosis that, in the absence of infection, it is the presence of emphysema rather than the amount of nodulation or consolidation, unless this is very gross, which causes disability.

Diagnosis.—Silicosis, massive.

Case No. 41.—The patient was a metalliferous miner and a coal-miner, aged 50 years. He worked on the surface sharpening picks at a Wyalong, New South Wales, gold-quartz mine for twelve years, and at a Southern field colliery for two years, and in the Northern field collieries for sixteen years, during this period for eight years he was also engaged shaft-sinking. He died from an haemoptysis. He had only done intermittent work for five years before his death. A radiograph of the chest shows generalized, nodular fibrosis, with massive consolidation of both lungs and extensive cavitation of the right lung.

Post-mortem—Right Lung.—The lung is dark grey, the upper lobe in its upper part is covered with massive adhesions, the whole of the upper lobe is consolidated. This consolidation is, in the lower part of the lobe, due to pneumonic processes. The upper part of the lobe is a nodular, fibrotic consolidation, with a large ramifying tuberculous cavity and areas of caseation. The lower and middle lobes have a number of fibrotic nodules up to 2 mm. diameter, this part of the lung is spongy, with a little caseation in the hilar region.

Left Lung.—The upper lobe is solid and covered by dense adhesions in the upper half. On section, the upper lobe has in its upper half a large tuberculous cavity, the lower half is the seat of a massive, fibrotic consolidation of a nodular character and caseation. The lower lobe, on section, has in its upper half a number of fibrotic nodules from 1 to 3 mms. in diameter. The appearance is typically siliceous. A little caseation can be made out. The lower half of the lower lobe has a few scattered fibrotic nodules. Throughout the lung, there is no perivascular aggregation of coal-dust cells.

The dissecting microscope shows typical siliceous fibrosis.

Sections.—Sections show chiefly whorled nodules and massive fibrosis with a few coal-dust cells and tuberculous changes and giant cells.

Chemical Analysis.—Chemical analysis was made of one half of the upper lobes, which were consolidated, and one half of the lower lobes, which were spongy.

	Upper Lobes.	Lower Lobes.	Average.	
Ash	57·50	26·25	43·7	mg. per gram of dried lung.
Combined silica	0·40	0·95	0·64 mg.	,, ,,
Free silica	4·55	3·35	4·03 mg.	,, ,,
Free carbon	3·5	3·0	3·28 mg.	,, ,,

The upper lobes were grossly consolidated, the lower lobes had fewer nodules and no consolidations.

Remarks.—This lung is an example of silicosis and tuberculosis, and shows a nodular fibrosis caused by quartz and not by combined silica nor coal-dust. It is curious that practically no carbon is found in the lung, but it is unknown how long it takes an infected lung to get rid of coal-dust, and it is noted elsewhere that the amount of coal-dust which enters into an already fibrosed lung is not great. Whether the quartz in the lung came from tool-sharpening at Wyalong or from work in the coal mines which included shaft sinking, is unknown. It is interesting to note that there is less than 0·5 per cent. free and combined silica in the dried lung, associated with a condition of massive consolidations; but it must here be noted that much of the consolidations has rotted away.

Diagnosis.—Silicosis, massive and tuberculosis.

Case No. 61.—The patient was a coal-miner, aged 54 years. He worked in gold mines at Bendigo (Victoria) for three years, in the Victorian State Coal Mine, Wonthaggi, for eight years, and the Zig-Zag Colliery, Western coal field, New South Wales, for fifteen years. He had not worked for nine months before his death and had been diagnosed as an open case of tuberculosis and pneumonokoniosis. The radiograph shows massive consolidations in both upper lung fields.

Post-mortem.—Smears made from glands and consolidations showed tubercle bacilli.

Right Lung.—The lung is very bulky, covered generally with gross adhesions. The site of the upper lobe is a great cavity. What remains of the upper lobe suggests that the excavation took place in dust consolidations. The middle lobe is a massive, black consolidation with tuberculous caseation throughout. The lower lobe, in its upper part, has a black, massive consolidation with a cavity. The rest of the lower

lobe shows perivascular, nodular fibrosis, with very little development of emphysema. There is a large cavity which has a cyst-like wall in its basal part and may have been formed from a haemorrhage. In the lower lobe, numerous fibrotic nodules of the coal-dust type are present.

Left Lung.—The lung is bulky and generally covered by adhesions. There is a massive, black consolidation of the upper lobe, largely excavated by tuberculous proeesses. Apart from this exeavation, this lobe shows black, fibrotic nodules and some tuberculous easeation and emphysema. The lower lobe has, in its upper half, a massive, blaek consolidation with some cavitations, and there is a generalized development of black, fibrotic nodules. The glands are greyish-black and necrotie, hard and not very large.

The dissecting microscope shows fibrosis, partly of the siliceous and partly of the coal-dust type.

Sections.—Sections show perivascular, nodular and massive fibrosis, mainly of the silieeous, but partly of the coal-dust type, with tuberculous and pneumonic changes.

Chemical Analysis.—Ash ... ... 52·65 mg. per gram of dried lung.
Combined silica... ... ... 11·60 mg. ,, ,,
Free silica ... ... 2·30 mg. ,, ,,
Carbon ... ... 15·0 mg. ,, ,,

Diagnosis.—Pneumonokoniosis, siliceous type, marked and tubereulosis.

METALLIFEROUS MINERS.

Cases Nos. 14, 18, 23, 37, 42, 44, 51, 54, 55, 56, 77.

Case No. 14.—The patient was a metalliferous miner, aged 52. The cause of death was pneumonokoniosis and tuberculosis. The radiograph shows generalized, coarse, nodular fibrosis, with massive consolidation in the right, middle and upper lobes. Smaller consolidations and a large cavity are present in the left lower lobe, with marked adhesions of the diaphragm. He worked as a quartz miner in Victoria for two years, at Broken Hill (machine drilling) for one year, at Kalgoorlie (machine drilling) for fourteen years, as a sewer miner, Sydney, for two years, and as a sewer miner, Canberra, for five years. Reference Fig. II. ([15]).

Post-mortem.—The left lung is covered with gross adhesions. The whole lung is bulky and very hard. It is composed almost entirely of small and large nodules which have here and there fused into areas of consolidation. There is a very large tuberculous cavity in the upper portion of the lower lobe, together with many areas of caseation, particularly in the lower lobe. The glands are very large, greyish-blaek, and very hard.

The right lung presents a similar appearance. There is no tubereulous cavity in this lung, but the middle lobe is consolidated, with many areas of caseation. The appearances of the lungs are those of gross pneumonokoniosis and tuberculosis.

The dissecting microseope shows fibrosis of the siliceous type.

Sections.—Sections show consolidations and nodular fibrosis of the siliceous type and tubereulosis.

Chemical Analysis.—Ash ... ... 81·8 mg. per gram of dried lung.
Combined silica... ... ... 12·1 mg. ,, ,,
Free silica ... ... 8·2 mg. ,, ,,
Carbon ... ... 8·5 mg. ,, ,,

Diagnosis.—Pneumonokoniosis, siliceous type, massive and tuberculosis.

Case No. 18.—The patient was a metalliferous miner, aged 45. He died suddenly from eoronary disease of the heart. He was quartz mining for an indefinite, but probably short, period some years before he died.

Post-mortem.—The lungs are greyish-black. There are a number of sago grains, more frequent in the lower lobes. In the upper lobes there are a small number of fibrous nodules of one to three millimetres in diameter. The lower lobes contain no nodules. The glands are small, not very hard, and greyish.

The dissecting microseope shows fibrotie nodules of the siliceous type.

Sections.—Sections show typical, whorled siliceous nodules.

Chemical Analysis.—Ash ... ... 25·5 mg. per gram of dried lung.
Combined silica... ... ... 4·6 mg. ,, ,,
Free silica ... ... 3·2 mg. ,, ,,
Carbon ... ... 8·0 mg. ,, ,,

Diagnosis.—Pneumonokoniosis, siliceous type, early.

Case No. 23 —The patient was quartz mining at Hill End and Padylaekey, and mining in serpentine at Lucknow for twelve years. He worked at a cement works for nineteen years. Reference Figs VI., VII ([15]).

Post-mortem.—The left lung is solid. It is covered with adhesions from four to five millimetres thick. The upper lobe is a massive eonsolidation in which a nodular eharacter ean be made out. The lower lobe is a mass of fibrotic nodules eaeh two to five millimetres in diameter. Areas of caseation oecur through the lung and there are numerous large tubereulous eavities. The glands are large, soft, and show early caseation.

The right lung is eovered with adhesions. The upper lobe is the site of a massive consolidation, which shows a nodular character and has areas of caseation. The rest of the upper lobe is made up of large fibrotie nodules and large areas of caseation. The lower and middle lobes have numerous nodules, two to five millimetres in diameter, perivaseular fibrosis, and areas of easeation.

The dissecting microseope shows fibrotie nodules and eonsolidations of the silieeous type and tubereulosis.

Sections.—Sections show nodulation of the siliceous type and massive fibrosis and perivascular fibrosis.

Chemical Analysis.—Ash	76·4 mg.	per gram of dried lung.
Combined silica...	18·4 mg.	,, ,,
Free silica	10·0 mg.	,, ,,
Carbon	6·8 mg.	,, ,,

Diagnosis.—Pneumonokoniosis, siliceous type, massive and tuberculosis.

Case No. 37.—The patient was a metalliferous miner, aged 57. He had a history of mining in Victoria, Western Australia and Queensland, in quartz and tin mines for at least twelve years. He had not been engaged in this work for some years. He lost weight, his sputum was found to contain tubercle bacilli, and he died within two years of the onset of his disability.

The radiograph showed generalized nodular fibrosis with consolidation in both upper lung fields, more extensive on the right side, in which there was a large cavity.

Post-mortem.—The right lung has adhesions which are very dense over the upper lobe and which cover the whole, very bulky lung. What remains of the upper lobe is a consolidation, areas of caseation, and a huge cavity occupying nearly the whole lobe. The consolidation is of a nodular character. The lower and middle lobes have numerous fibrotic nodules with areas of caseation in the middle lobe. The glands are enlarged, black, and rubber-like.

The left lung has adhesions over the upper and lower lobes. The upper lobe is a mass of fibrotic nodules, with caseous areas, and dense subpleural consolidation. The upper part of the lower lobe is similar in character, the lower portion has few nodules.

The dissecting microscope shows fibrosis of the siliceous type, with caseation.

There is no emphysema in either lung.

Sections.—The sections show alveolar, whorled nodules of the siliceous type and massive fibrosis with tuberculous changes and giant-cell formation.

Chemical Analysis.—Ash	30·1 mg.	per gram of dried lung.
Combined silica...	0·66 mg.	,, ,,
Free silica	4·05 mg.	,, ,,

Remarks.—The lungs are a typical example of gross silicosis and tuberculosis, with practically complete cavitation of the right upper lobe. Considering the gross changes, more free silica might have been expected in the chemical analysis, but this has probably been reduced by the destruction of the right upper lobe. The lacunae in the Industrial History do not permit of any correlation of the working conditions and of the time he has been away from work, with the chemical analysis. As is usual in silicotic lungs as opposed to anthracotic lungs, there is no emphysema.

Diagnosis.—Silicosis, massive and tuberculosis.

Case No. 42.—The patient was a metalliferous miner, aged 58. He was in receipt of compensation under the Broken Hill Act. He died 10th August, 1933, from chronic myocarditis. On clinical examination, on several occasions after 1928, crepitations at the bases and over the right upper lobe were noted and signs of cardiac failure.

A radiograph, 1931, was reported on as showing numerous opaque areas about one-third to half-inch in diameter, diffuse infiltrations of both lungs, the appearance suggesting extensive pneumonokoniosis and, in the right subapical region, some slight cavity formation, possibly superimposed tuberculosis.

He worked for ten years as a prospector in Queensland and Western Australia, for two years as a gold miner, and for fourteen years as a metalliferous miner at Broken Hill.

Post-mortem.—The heart showed myocardial degeneration with dilatation of the mitral valve. The coronary arteries showed no abnormality.

Right Lung.—The lung is greyish, due to general adhesions which are well-developed at the apex of the upper lobe. The glands are very large, hard and calcified with necrotic centres. The apex of the upper lobe has an irregular nodular consolidation measuring 2 x 4 cm., and this lobe contains about a dozen large—about 5 mm. in diameter—black, fibrotic nodules, some with a surrounding greyish fibrosis. The lower lobe has a smaller number of large, black, fibrotic nodules; a few of them are subpleural. Some of the nodules have necrotic centres. There is no emphysema.

Left Lung.—The pericardium is adherent and there are organised adhesions over the whole lung the upper lobe of which has been torn away in extracting the lung from the thorax. The glands are large and calcified with necrotic centres. There is a subpleural consolidation of the upper part of the lower lobe measuring 7 x 2 to 3 cm., and a small aggregation of nodules at the apex of the upper lobe. There are only a few large fibrotic nodules in this lung, and a small number of very small fibrotic nodules. There is no evidence of tuberculosis apart from the necrotic centres of the glands and a few of the nodules.

The dissecting microscope shows fibrosis of the siliceous type.

Sections.—Sections show whorled nodules and consolidations, sometimes with a nodular basis. There is some emphysema, but no evidence of tuberculosis. The glands are calcified and necrotic.

Injection of Guinea Pigs.—One of four guinea pigs injected with macerated gland and consolidation substance developed a tuberculous abscess.

Chemical Analysis.—Ash	111·5 mg.	per gram of dried lung.
Combined silica...	5·12 mg.	,, ,,
Free silica	1·22 mg.	,, ,,
Alumina (Al_2O_3)	3·56 mg.	,, ,,
Ferric oxide (Fe_2O_3)	4·12 mg.	,, ,,
Calcium oxide (CaO)	45·78 mg.	,, ,,
Magnesium oxide (MgO)	1·49 mg.	,, ,,
Phosphoric anhydride (P_2O_5)	33·2 mg.	,, ,,
Free carbon	3·0 mg.	,,

Remarks.—The characteristic feature of the lungs is a small number of large nodules, the extent of the adhesions, and the great size and calcification of the glands and the comparatively slight change in the general lung tissue. The tuberculous element was latent, the cause of death was failing heart and there was insufficient change in the lungs apart from adhesions to cause or aggravate this in any but a slight degree. The latent tuberculosis had not recently caused ill-health.

The chemical analysis shows much more combined than free silica and petrological examination of the ashes agrees with this finding.

Diagnosis.—Pneumonokoniosis, siliceous type, moderate.

Case No. 44.—The patient was a metalliferous miner, aged 49 years. He worked in the Ballarat fields trucking for two years and as a miner at Mt. Lyell, Tasmania, and in the west coast of New Zealand for seven years. He was a miner in the Ardlethan tin mines, New South Wales, for one year. He had not done any mining for ten years prior to his death. A year before he died, he became weak, had a cough and lost weight and tubercle bacilli were found in his sputum.

A radiograph showed generalized large fibrotic nodules with a number of consolidations in each lung and a large cavity in the right upper lung.

Post-mortem—Right Lung.—The right lung is solid. The glands are very large and hard. There are dense, ragged adhesions over the upper lobe and less marked adhesions over the lower lobe where sago grains are to be seen. The whole of the upper lobe has been excavated by tuberculous processes. There are areas of caseation and numerous fibrotic nodules throughout the lower lobe.

Left Lung.—The lung is very solid and bulky with marked adhesions over the upper lobe. On section, this is densely studded with black fibrotic nodules ranging from 2 to 5 mm. in diameter together with areas of caseation with some emphysematous changes. The lower lobe has generalized nodulation and caseation more marked in its upper part.

The dissecting microscope shows fibrosis of the siliceous type and caseation.

Sections.—Sections show whorled nodules and massive nodular fibrosis with tuberculous caseation and giant cell systems.

Chemical Analysis.—Ash	... ...	31·1	mg. per gram of dried lung.
Combined silica...	... ...	1·43 mg.	,, ,,
Free silica	... ...	5·43 mg.	,, ,,

Diagnosis.—Silicosis, massive and tuberculosis.

Case No. 51.—The patient was a metalliferous miner and a labourer, aged 62 years. He had been a miner for seven years at Cobar and ten years at Broken Hill. He then became a labourer for sixteen years, but had been unable to work for three years before his death. His illness commenced seven years before he died, the chief symptoms being cough, sputum, dyspnoea, loss of weight and night sweats.

A radiograph showed generalized, fine to coarse fibrosis with consolidations in the middle regions, much more marked on the left side, with a large cavity in the upper lobe.

Post-mortem—Right Lung.—The right lung is greyish-black in appearance with a moderate development of adhesions, and sago grains are generally distributed. The upper lobe has numerous, large fibrotic nodules and a consolidation at its base. The lower lobe has less numerous, large, fibrotic nodules. The glands are black and enlarged with necrotic centres.

Left Lung.—The left lung is covered with very dense adhesions. The upper lobe is practically solid from numerous large fibrotic nodules and it has been excavated by tuberculous processes and a large cavity formed. The lower lobe has less numerous fibrotic nodules and areas of tuberculous caseation. The glands are enlarged, black and necrosed.

The dissecting microscope shows fibrosis of the siliceous type with tuberculous changes.

Sections.—Sections show whorled nodules and massive fibrosis with tuberculous changes and giant cells.

Chemical Analysis.—Ash	... ...	44·4	mg. per gram of dried lung.
Combined silica...	... ...	2·54 mg.	,, ,,
Free silica	... ...	7·30 mg.	,, ,,

Remarks.—From the mining history, a greater amount of combined silica might have been expected; its absence may be related to the fact that he has not been exposed to silicate dust for sixteen years.

Diagnosis.—Silicosis, marked and tuberculosis.

Case No. 54.—The patient was a metalliferous miner, aged 59. He worked in gold mines in Western Australia, Queensland, Tasmania and New South Wales. He also worked at Broken Hill. There were apparently substantial periods of work in each State. He was diagnosed as having dusted lungs twenty-seven years ago, but was able to work to within six months of his death when his cough became worse, he had marked loss of weight and tubercle bacilli were found in the sputum.

The radiograph shows a generalized, coarse fibrosis with consolidations in the mid-zone of the right lung and the lower zone of the left lung. There are large cavities in the upper fields of both lungs and smaller cavities in both hilar regions.

Post-mortem—Right Lung —The right lung is extraordinarily bulky and is covered by dense adhesions, particularly marked in the upper lobe. The glands are very hard and very large and show tuberculous changes. The whole of the upper lobe is a huge tuberculous cavity. The middle lobe has a number of small fibrotic nodules, but is mainly tuberculous caseation with a small cavity. The lower lobe consists of generalized fibrotic nodules and is practically solid with tuberculous caseation.

Left Lung.—The left lung presents a very similar appearance.

The dissecting microscope shows fibrosis of the siliceous type and tuberculosis.

Sections.—Sections show nodular and massive fibrosis of the siliceous type and tuberculous changes.

Chemical Analysis.—Ash ... ... 66·1 mg. per gram of dried lung.
Combined silica... ... ... 10·65 mg. ,, ,,
Free silica ... ... 9·12 mg. ,, ,,

Diagnosis.—Pneumonokoniosis, siliceous type, massive and tuberculosis.

Case No. 55.—The patient was a metalliferous miner, aged 60 years. He was also employed coaling ships. He worked in the New South Wales Gibralter Quartz Mine for two years, and in Western Australia and at Mt. Morgan, Queensland, for twenty-three years. He left mining seventeen years before his death and was engaged coaling ships for twelve years, but had not done this work for five years before he died. His death was due to tuberculosis, bronchitis and pulmonary fibrosis.

Radiograph shows generalized nodular fibrosis with gross consolidations in the right lung and less marked consolidations in the left hilum.

Post-mortem—Right Lung.—The lung is very solid and all lobes are covered with very dense, organized adhesions. The glands are greyish-black, enlarged and necrotic. The upper lobe is the site of a large tuberculous cavity, ramifying through a consolidation made up of nodules with areas of caseation. The lower lobe is also solid with more caseation and fewer nodules.

Left Lung.—Adhesions are only present over the upper part of the upper lobe. The lung is greyish-black. There is a consolidation in the upper lobe measuring 3 x 3 x 1·5 cm. which cut as though it were calcified and presents a curious, striped appearance and shows no nodular basis. There is a moderate development in the upper lobe of large fibrotic nodules which are all associated with tuberculous caseation and some perivascular fibrosis and emphysema. The lower lobe shows the development of large nodules associated with tuberculous changes with a moderate degree of perivascular fibrosis with emphysema. The glands are grey, enlarged with necrotic centres.

Under the dissecting microscope is seen chiefly fibrosis of the siliceous type with caseation and a little perivascular fibrosis with slight nodulation of the coal-dust type.

Sections.—Sections show whorled nodules of the siliceous type and massive fibrosis with a nodular basis. All these forms of fibrosis are modified by tuberculous changes. There is a little perivascular fibrosis of the coal-dust type.

Chemical Analysis.—Ash ... ... 62·0 mg. per gram of dried lung.
Combined silica... ... ... 7·70 mg. ,, ,,
Free silica ... ... 11·65 mg. ,, ,,

Remarks.—The amount of free and combined silica which equals 1·9 per cent. of dry lung, is high, and is what may be expected with gross consolidations, due to dust, such as are present here. The figure for combined silica is compatible with work in certain Western Australian and Queensland mines.

Diagnosis.—Silicosis, massive and tuberculosis.

Case No. 56.—The patient was a quartz-reef gold miner, aged 53 years. He worked intermittently for thirty years in small quartz-reef gold mines near Gloucester, New South Wales. He also worked for two years in the Balmain, Sydney, Colliery. Four months before his death, he was affected by a cough and weakness, and tuberculosis was diagnosed.

Post-mortem—Right Lung.—The lung is greyish and covered with slight adhesions. The glands are enlarged, greyish and not hard. On section, at the base of the upper lobe, there are a comparatively few, light greyish, fibrotic nodules, 2 to 5 mm. in diameter. The lower lobe shows no changes apart from a large area of hypostatic pneumonia.

Left Lung.—The left lung is greyish with some scarring of the apex. On section, the upper lobe is seen to contain a number of greyish, fibrotic nodules, together with areas of caseation. The nodules are not pigmented. The glands are enlarged, not hard, greyish with doubtful caseation. The lower lobe has fibrotic nodules and caseation in its upper part, with a large area of hypostatic pneumonia at its base.

The dissecting microscope shows fibrosis of the siliceous type with tuberculous caseation.

Seetions.—Sections show whorled nodules with tuberculous caseation.

Chemical Analysis.—Ash ... ... 36·6 mg. per gram of dried lung.
Combined silica... ... ... 2·88 mg. ,, ,,
Free silica ... ... 7·92 mg. ,, ,,

Remarks.—Neither the nodulation nor the tuberculous processes are extensive, and the chemical analysis, when considered along with the industrial history, arouses curiosity as to the means by which such a large amount of free and combined silica could be stored in the lung without producing more definite fibrosis.

Diagnosis.—Silicosis, moderate and tuberculosis.

Case No. 77.—The patient was aged 59. There is an indefinite industrial history. He is stated to have been an engine-driver at the State Coal Mine for eleven years and then a fireman exposed to the dust of ashes for three years. He previously worked underground in different mines in his early days but not for the last thirty years. No clinical details of illness have been received.

Post-mortem—Right Lung.—The right lung is very bulky and covered by gross adhesions and it is densely consolidated. On section, what remains of the upper lobe is a dense fibrotic consolidation, but nearly all the lobe has been excavated by tuberculous processes and there is a large cavity. The consolidation is greyish-black, similar to that found in metalliferous miners; it has a nodular basis. The lower lobe is also densely consolidated by nodular fibrotic consolidations with some tuberculous caseation. About one half the lobe remains unconsolidated. The nodules making up the consolidation are of the siliceous type, running up to 5 mm. in diameter. The glands are greyish-black, very much enlarged, very hard and show changes of necrosis or tuberculosis.

Left Lung.—The left lung is covered with numerous sago grains. There are a few adhesions at the apex of the diaphragm and in the interlobar septum. The upper lobe, in its upper part, is densely consolidated. The whole lung is greyish-black. On section, there is a large, greyish-black, consolidation

in the upper lobe, occupying about one quarter the area of the upper lobe, in its upper part. There are one or two calcified cysts in this consolidation. The remainder of the upper lobe has a number of discrete, greyish-black, fibrotic nodules, ranging in size from 2 to 5 mm. in diameter. The lower lobe has no consolidations but a moderate number of greyish-black, fibrotic nodules, scattered fairly uniformly through the lung, but they are more frequent in the subpleural and diaphragmatic areas. There is no evidence of coal-dust deposition.

The dissecting microscope shows fibrosis of the siliceous type.

Sections.—The sections show fibrosis of the siliceous type and tuberculosis.

Chemical Analysis.—Ash ... ... 62·20 mg. per gram of dried lung.
Combined silica ... ... 13·70 mg. ,, ,,
Free silica ... ... 7·50 mg. ,, ,,
Free carbon ... ... 4·80 mg. ,, ,,

Remarks.—The pathology and chemical analysis of these lungs resembles that of metalliferous miners. In our opinion, the gross dust fibrosis and tubercular changes did not result from the inhalation of the dust of ashes in the last three years of life and probably such exposure had little effect on an already well-developed pneumonokoniosis which we consider has been present for many years.

Diagnosis.—Pneumonokoniosis, siliceous type, massive and tuberculosis.

SYDNEY SANDSTONE AND METALLIFEROUS MINERS.

Cases Nos. 36, 47, 71, 81.

Case No. 36.—The patient was a rock-chopper and sewer miner. He was aged 59. He spent nine years working in Sydney sandstone. Apparently he had done mining work for thirty years. Seen three years before his death by medical officers of the Silicosis Committee, his chest expansion was from 33 to 35½ inches, with bronchial breathing of the right upper lung and the radiograph report at this time stated there was tuberculous mottling of the left upper lobe and of the right upper and middle lobes with pleural adhesions to right diaphragm. He was then certified by the Committee as not having silicosis. Seen eighteen months before death, examined by the same medical officers, he complained of dyspnoea, cough, pain in the chest and haemoptysis. Extensive signs were noted in both lungs and he was thought to have cavities, and complained of extreme debility and dyspnoea. The radiograph report stated that there was pleural thickening over the whole of the right lung with dense adhesions to the right diaphragm and that the left lung showed much mottling, cardiac and aortic enlargement. He was certified by the medical officers of the Committee as not having silicosis. He was in hospital for three months before he died, he then suffered from shortness of breath and cough with copious sputum. There was marked oedema of the arms and legs and later of the abdomen. The breath sounds were of the bronchial type and there was amphoric breathing at the left apex. No tubercle bacilli were found in the sputum which was examined daily for one week. The urine contained a heavy cloud of albumin. The hospital radiographer reported there was advanced silicosis of both lungs probably with superimposed tuberculosis. Only on two occasions, one a week before his death and the other the day of his death, was there any elevation of temperature during his three months' stay in hospital.

Post-mortem.—There was oedema of the face, arms and legs. There was pleural effusion of both sides, the heart was enlarged, the muscles of both right and left ventricles were hypertrophied, the liver was congested and enlarged. The kidneys were normal.

The right lung is greyish owing to the presence of adhesions which are well developed in all lobes, but small white nodules (sago grains) are obvious on the surface and are generally distributed. The upper lobe is much diminished in size and is consolidated. There are very marked interlobar adhesions. On section, the upper lobe is a greyish-black area of consolidation showing degenerative changes in the central areas. It measures 8 x 4 cms. The middle lobe contains a number of fibrotic nodules, mostly less than 1 mm. a few of 2 to 3 mm. in diameter, and a few subpleural small consolidations. The lower lobe has a small number of fibrotic nodules 2 to 3 mm. diameter, subpleural and hilar in situation.

The left lung is greyish-black—the most obvious feature is a large number of sago grains which vary from 1 to 2 mm. diameter to minute size. There are interlobar adhesions and adhesions around the apical portion of the upper lobe which is the site of a consolidation. This consolidation is irregular, measuring, about 5 x 5 cm. There is no necrosis seen in it on section, when a definitely nodular structure can be made out: the rest of the upper lobe was spongy. The lower lobe shows a number of fibrotic nodules in its upper part from 0·5 to 3 mm. in diameter, arranged more in relation to the hilar than the pleural region. The glands are black, hard and enlarged.

The dissecting microscope shows fibrosis of the siliceous type.

Sections.—Sections show whorled nodules of the siliceous type and massive fibrosis with no evidence of tuberculosis.

Injection of Guinea Pigs.—Six guinea pigs were injected with either maccrated gland substance or degenerative area of right upper lobe consolidation and all remained free from tuberculosis.

Chemical Analysis.—One half of each lung cut in the axillary plane was analysed. The areas with consolidation showed:—

Ash ... ... 59·21 mg. per gram of dried lung.
Combined silica ... ... 10·34 mg. ,, ,,
Free silica ... ... 10·90 mg. ,, ,,

The analysis of the rest of this material which showed only slight consolidation or fibrotic nodules in the lower lobes, was:—

Ash ... ... 31·44 mg. per gram of dried lung.
Combined silica ... ... 3·01 mg. ,, ,,
Free silica ... ... 4·40 mg. ,, ,,

The average of these analyses—free silica 7·1 mg. per gram of dry lung, combined silica 6·1 mg. per gram of dry lung—is of the same order as quantities found in the lungs of men who had gross silicosis.

Remarks.—This case is of particular interest. The condition which has resulted from the consolidation and retraction of the whole of the upper lobe of the right lung is unusual in my experience. Both in silicosis and anthracosis, it is usual for most of the damage to be confined to the upper lobes and, owing to the overlapping of the lower and upper lobes, it is also usual for radiographers in their reports to refer fibrosis of the lower part of the upper lobes to the lower lobes. In this case, the radiographer of the Silicosis Committee declined to accept the condition as silicosis. This case illustrates that compensation schemes for silicosis that attempt to separate cases of tuberculosis from cases of silicosis, are destined to cause inequitable decisions, for it is commonly beyond medical or radiographic skill to separate these conditions in workers exposed to certain dusts. A similar case, in which both upper lobes were reduced and contracted has been described by Professor J. B. Cleland of Adelaide ([21]) :—

> "*Advanced Silicosis of the Upper Lobes of both Lungs suggesting a Mediastinal Tumour.*"—"The patient, a male aged about 40 years, under the care of Dr. E. West, had frequent vomiting and cough. He had been a miner. X-ray photographs showed a dark shadow apparently bulging from each side of the superior mediastinum and suggesting a neoplasm. *Post-mortem* examination showed, however, extensive silicosis in the upper lobes of the two lungs which had led to much reduction in size of these lobes and their contraction towards the lung roots. Their centres were occupied by dense, very hard, grey masses of fibrous tissue. The upper portions of the lower lobes of the lungs on each side had undergone compensatory emphysema, and at death, occupied the apical portion of each pleural cavity instead of the upper lobes doing so."

It is worthy of note that a daughter of this worker (aged 18) has since his death developed pulmonary tuberculosis—which leads to the question, was this worker, in this child's infancy, affected by tuberculosis which completely healed ?

Diagnosis.—Silicosis, massive.

Case No. 47.—The patient was a rock-chopper and metalliferous miner, aged 62. He worked in Sydney sandstone for eight years, Mt. Lyell Mine, Tasmania, five years and for three years in a Bendigo quartz mine. He had been in receipt of compensation from the Silicosis Committee for four years.

A report of a radiographer five years before death, stated that there was silicosis present and probably superadded tubercular infection. He died following haemoptyses.

Post-mortem—Right Lung.—The lung is covered with adhesions and is bulky and solid. The upper lobe is a consolidation with a nodular basis and is largely excavated by tuberculous processes. The lower lobe has in its upper part numerous very large fibrotic nodules and a nodular consolidation. Fibrotic nodules and tuberculous caseation were scattered throughout the lobe.

Left Lung.—The lung is covered with adhesions. In the upper lobe there is a large consolidation of a nodular character, together with many large fibrotic nodules. The lower and middle lobe has a smaller number of very large fibrotic nodules. The glands were very large and black.

The dissecting microscope shows typical siliceous fibrosis.

Sections.—Sections show nodules and massive, nodular fibrosis with probable tuberculous changes.

Chemical Analysis.—

Ash	43·5 mg.	per gram of dried lung.
Combined silica...	7·68 mg.	,, ,,
Free silica	8·38 mg.	,, ,,

Remarks.—The relatively high amount of combined silica may be related to work in Mt. Lyell and, if this hypothesis is correct, the combined silica will have remained in the lungs for about sixteen years.

Diagnosis.—Silicosis, massive and tuberculosis.

Case No. 71.—The patient was a sandstone quarryman who had also been a metalliferous miner for some years. He was aged 60. His full industrial history could not be ascertained. He had worked at least four years as a sandstone quarryman. A radiograph taken five years before his death was reported on as showing scarring at the left apex with advanced catarrhal changes in the lung fields. A radiograph taken shortly before he died, was reported as showing tuberculous lesions in both lungs, probably superadded to a silicotic condition. Nine months before his death, tubercle bacilli were found in his sputum and he became emaciated and had a cough without haemoptyses or night-sweats.

Post-mortem.—The lungs are extraordinarily bulky. The right lung weighs 3 lb. 12 oz., and the left 4 lb. 2 oz. The right lung has few adhesions. On section, the upper lobe contains comparatively few silicotic nodules with a small subpleural consolidation and a deeper area of consolidation and shows tuberculous caseation. The lower lobe shows comparatively few fibrotic nodules with some tuberculous and pneumonic changes. The left lung is covered by adhesions and is wholly consolidated. On section, the upper lobe contains numerous black fibrotic nodules with areas of subpleural consolidation and generalized tuberculous caseation. In the upper half of the lobe there is a large ramifying cavity. In the lower lobe the fibrotic nodules are not quite so numerous, there are no areas of fibrotic consolidation, there is generalized tuberculous caseation.

The dissecting microscope shows fibrosis of the siliceous type with tuberculous caseation.

Sections.—Sections show fibrosis of the siliceous type and tuberculosis.

Chemical Analysis.—

	Right Lung.	Left Lung.	
Ash	53·5	38·40 mg.	per gram of dried lung.
Combined silica	5·0	4·70 mg.	,, ,,
Free silica	6·10	1·61 mg.	,, ,,
Carbon	3·0	2·5 mg.	,, ,,

Remarks.—The chemical analysis which has been made of one half of each lung, divided in the axillary plane, shows an interesting feature which has been noted in other lungs in the reduction of the amount of free silica in a lung where phthisical cavitation of a large consolidation has taken place.

Diagnosis.—Silicosis, massive and tuberculosis.

Case No. 81.—The patient was a sandstone worker and metalliferous miner, aged 61. He worked in the Cobar district as a metalliferous miner for eight years and in various other mines for ten years and as a Sydney sandstone worker for three years. Seven years before his death, he was examined by the Silicosis Committee, his chest expansion was 1½ inches; his weight, 8 stone 10 lb.; the radiographer reported that silicosis was present. He complained of cough and shortness of breath. Four years later, his weight was 8 stone 2 lb., and the radiographer reported that there was superadded tuberculosis of each apex. Eighteen months before his death, following a radiographic report that there was advanced tuberculosis practically of the whole of both lungs with numerous cavities of the apices, he entered a tuberculosis sanatorium. The sputum examination was negative. His weight was 7 stone 12 lb.; there were numerous crepitations to be heard over the apices. The blood sedimentation test showed no departure from normal.

Post-mortem—Right Lung.—The lung is greyish-black with marked adhesions of the posterior surface and apex. A cavity of the upper lobe opens on the surface. On section, the whole of the upper lobe is a black mass of consolidation with a nodular basis and there is a ramifying cavity in this fibrosis, apparently of a non-tuberculous character. The middle lobe has many black, fibrotic nodules, some five or six millimetres in diameter. There is some emphysema but no tuberculous caseation. The lower lobe has in its upper part a small fibrotic consolidation and a few black fibrotic nodules of the silicotic type. There is a large area of hypostatic pneumonia and some emphysema. The glands are enlarged, black and slightly necrotic in their centres.

Left Lung.—The lung is covered on its postero-lateral aspect with dense adhesions which are less well developed over the apical and anterior parts of the lung. On section, the greater part of the upper lobe is a massive, black, fibrotic consolidation which contains a ramifying cavity, the nature of which does not suggest tuberculosis. This cavity opens on the exterior of the lung, probably by morbid processes. The consolidation has a nodular basis and there are black, fibrotic nodules in the small areas of the upper lobe which are not consolidated. The lower lobe has in its upper part a small consolidation and there are a number of large, fibrotic nodules scattered throughout the rest of the lobe which is moderately emphysematous. The glands are not much enlarged, black with necrotic centres.

The dissecting microscope shows consolidation and nodules of the siliceous type and a little emphysema.

Sections.—Sections show fibrotic consolidation of the siliceous type but no evidence of tuberculosis. Some emphysema and pneumonia.

Chemical Analysis.—Ash	64·84 mg.	per gram of dried lung.	
Combined silica...	6·90 mg.	,,	,,
Free silica	8·75 mg.	,,	,,
Carbon	19·50 mg.	,,	,,

Remarks.—This lung is an excellent example of massive siliceous consolidation of both upper lobes, together with non-tuberculous cavitation. Such cases are diagnosed clinically and radiologically as tuberculosis. A similar condition has been described in case No. 9.

Diagnosis.—Silicosis, massive.

SYDNEY SANDSTONE WORKERS.

Cases Nos. 17, 19, 24, 33, 45, 52, 68, 75.

Case No. 17.—The patient was a stonemason, aged 51. The radiograph shows a coarse, nodular fibrosis with consolidation of both upper lobes. Tubercle bacilli were found in the sputum. He worked as a stonemason in Sydney sandstone for twenty-six years.

Post-mortem.—The lungs are covered with dense adhesions; the upper lobes of both lungs have large tuberculous cavities. There are numerous fibrotic nodules from 1 to 5 millimetres in diameter, more frequent in the upper lobes. The glands are soft, greyish, with small areas of caseation. There are small areas of caseation in the lower lobes.

The dissecting microscope shows fibrotic nodules of the siliceous type.

Sections.—Sections show fibrotic nodules of the siliceous type and tuberculosis.

Chemical Analysis.—Ash	18·2 mg.	per gram of dried lung.	
Combined silica...	1·3 mg.	,,	,,
Free silica	3·4 mg.	,,	,,
Carbon	1·5 mg.	,,	,,

Diagnosis.—Silicosis, massive and tuberculosis.

Case No. 19.—The patient was a stonemason, aged 49. The cause of death was tuberculosis. The radiograph shows a coarse, nodular fibrosis with consolidation at both bases. He was a Sydney sandstone mason for many years.

Post-mortem.—The left lung is greyish, with few adhesions; sago grains are scarce. There are a number of fibrotic nodules, one to three millimetres in diameter, in the upper lobe. At the base of the upper lobe, there is an area of caseation and tuberculous bronchopneumonia. There are a few nodules in the upper part of the lower lobe. The glands are greyish, enlarged and hard.

In the right lung there are a few adhesions; sago grains are not obvious. The upper lobe has a number of fibrotic nodules, 1 to 3 millimetres in diameter. These are also present in the upper part of the lower and middle lobes. The glands are enlarged and very hard. There is some glandular caseation.

The dissecting microscope shows fibrotic nodules of the siliceous type.

Sections.—Sections show laminated whorled nodules free from infective changes, and necrosed composite nodules surrounded by fibroblastic tissue, characteristic of tuberculous changes in siliceous nodules.

Chemical Analysis.—Ash	21·1 mg.	per gram of dried lung.	
Combined silica...	1·9 mg.	,,	,,
Free silica	7·0 mg.	,,	,,
Carbon	3·0 mg.	,,	,,

Diagnosis.—Silicosis, moderate and tuberculosis.

Case No. 24.—The patient was a stonemason, aged 68. The radiograph shows coarse, nodular fibrosis of the right lung with consolidation in the hilar region and the lower lobe. The left lung shows coarse, nodular fibrosis with consolidations in the upper and lower lobes. There was a history of cough with sputum. Tubercle bacilli were not found in the sputum. He worked as a stonemason in Sydney sandstone for seventeen and a half years. Elsewhere he worked on mixed stone for nine years.

Post-mortem.—The right lung only was obtained. The lung is grey. There are some adhesions. Sago grains are not obvious. The upper, middle and to a lesser extent the lower lobe has a number of fibrotic nodules ranging in size from 2 to 5 millimetres. There is an aggregation of nodules forming a well-marked consolidation in the middle lobe. There are several smaller consolidations of nodules in the upper lobe. There is no obvious tuberculosis. The glands are hard and slightly enlarged.

The dissecting microscope shows fibrotic nodular consolidations of the siliceous type.

Sections.—Sections show fibrotic nodules of the siliceous type and massive fibrosis.

Chemical Analysis.—Ash ... ... 31·8 mg. per gram of dried lung.
Combined silica... ... ... 3·1 mg. ,, ,,
Free silica ... ... 5·6 mg. ,, ,,
Carbon ... ... 5·8 mg. ,, ,,

Diagnosis.—Silicosis, massive.

Case No. 33.—The patient was a stonemason, aged 56. He was a Sydney sandstone mason for seventeen years and previously had been a stonemason working in granite in England and Wales. He complained of shortness of breath, cough with sputum, debility and loss of weight. A radiographic report states that there was a large cavity of the right upper lobe and a smaller cavity at the base of the left upper lobe and a mottling of both lungs and that the appearances were tubercular, but that, in view of the history of this worker, it was impossible to state definitely that there was not some accompanying silicosis.

Post-mortem.—Two pieces of right lung and portion of apex of left lung were received. The right lung in its upper lobe shows marked adhesions with a tuberculous cavity in a greyish consolidation which is largely excavated. There are a number of fibrotic nodules—up to 3 mm. in diameter—some of which show to the naked eye, tuberculous changes. There are areas of caseation throughout the lung. There is an area of nodular consolidation 4 x 2 cm. at the upper part of the lower lobe which shows tubercreulous changes. Another portion of lung, probably apex of left lung, shows gross adhesions with a large tubercreulous cavity in a consolidation of a nodular character. There are a few fibrotic nodules apart from the consolidation, some of these showing tubercreulous changes. Tubercle bacilli were found in smears made from the lung.

The dissecting microscope shows fibrosis of the siliceous type with tuberculous changes.

Sections.—Sections show nodular and massive fibrosis of the siliceous type with tuberculous changes.

Chemical Analysis.—Ash ... ... 30·7 mg. per gram of dried lung.
Combined silica... ... ... 1·00 mg. ,, ,,
Free silica ... ... 1·14 mg. ,, ,,

Remarks.—The small amount of free silica present is probably due to rotting away of the fibrosed upper lobes.

Diagnosis.—Silicosis, massive and tuberculosis.

Case No. 45.—The patient was a sewer miner, aged 42 years. He worked in Sydney sandstone for at least five years and probably longer. A year before his death, he developed tubercreulosis.

A radiograph showed a generalized nodular fibrosis with massive consolidations, cavities and pneumothorax of the right upper lobe.

Post-mortem—Right Lung.—The lung is hard and bulky and covered with very marked adhesions. The upper lobe has numerous fibrotic nodules with extensive tubercreulous caseation and a large cavity. The lower lobe shows a smaller number of fibrotic nodules and much tuberculous caseation.

Left Lung.—The lung is large, hard and greyish black, with a moderate development of adhesions. The glands are large and show caseous degeneration. The upper lobe is practically one mass of consolidation which shows a nodular basis and has a tubercreulous cavity. The lower lobe has a large number of fibrotic nodules in its upper half with some tubercreulous cavities.

The dissecting microscope shows typical siliceous fibrosis with tubercreulous changes.

Sections.—Sections show whorled nodules, massive fibrosis with tubercreulous caseation and giant cells.

Chemical Analysis.—Ash ... ... 30·3 mg. per gram of dried lung.
Combined silica... ... ... 2·10 mg. ,, ,,
Free silica ... ... 5·40 mg. ,, ,,

Diagnosis.—Silicosis, massive and tuberculosis.

Case No. 52.—The patient was a sewer miner and cement worker, aged 47 years. He worked in Sydney sandstone as a sewer miner for five years and as a concrete mixer for seven years. One year before his death, he complained of loss of weight and of a cough, and tubercle bacilli were found in his sputum.

A radiograph showed gross, generalized, coarse fibrosis with consolidations and a large cavity of the right upper lobe.

Post-mortem—Right Lung.—The lung is bulky and hard and is covered by dense adhesions. On section, there is a great cavity in the upper lobe and the part not excavated is solid with fibrotic nodules and tuberculous caseation. The lower lobe has fewer fibrotic nodules, but there are tuberculous changes. The glands are enlarged with tuberculous changes.

Left Lung.—The lung is covered with dense adhesions and is bulky and hard. The upper lobe contains a number of large fibrotic nodules and there is a large fan-shape consolidation radiating from the hilus. The lower lobe contains a number of large, fibrotic nodules and some areas of tuberculous caseation. The glands are enlarged and caseous.

The dissecting microscope shows fibrosis of the siliceous type and tuberculosis.

Sections.—Sections show whorled nodules and massive fibrosis and tuberculous changes with giant cells.

Chemical Analysis—Ash ... ... 40·6 mg. per gram of dried lung.
Combined silica... ... ... 0·71 mg. ,, ,,
Free silica ... ... 3·18 mg. ,, ,,

Diagnosis.—Silicosis, massive and tuberculosis.

Case No. 68.—The patient was a rock-chopper and sewer-miner, aged 62. He worked as a sandstone rock-chopper and sewer-miner for at least twenty years. He complained of shortness of breath and cough some years before his death. Five years before his death, a radiographer reported that he had early silicosis and early tuberculous infection of the left apex and the upper part of the right lower lobe. One year before his death, the radiographer reported that there was marked bilateral fibrosis with areas of consolidation throughout both lungs and that the condition was mainly tuberculous but there was probably an underlying silicosis.

Post-mortem—Right Lung.—The lung is very bulky and covered with adhesions. In the upper obe these are densely organized. On section, the whole of the upper lobe is a mass of dense consolidation, which has areas of caseation throughout and a large tuberculous cavity. This consolidation is of the silicotic type. The lower lobe is also the site of a consolidation with tuberculous cavitation and a number of fibrotic, silicotic nodules 3 to 4 mm. in diameter. Pneumonic changes are present and some emphysema. The glands are calcified and necrotic.

Left Lung.—The lung is bulky and covered with adhesions. On section, the upper lobe shows a fan-shaped consolidation, 5 x 2 x 4 cm., grey in colour and showing tuberculous caseation. There are a number of small typical, silicotic, fibrotic nodules also present. The lower lobe shows a consolidation with caseation, 5 x 4 x 3 cm. There are a large number of typical silicotic nodules in the upper part of the lower lobe, some emphysema and pneumonia.

The dissecting microscope shows fibrosis of the siliceous type with tuberculous caseation.

Sections.—Sections show whorled nodules and perivascular fibrosis and consolidations of the siliceous type.

Chemical Analysis.—Ash ... ... 52·85 mg. per gram of dried lung.
Combined silica... ... ... 2·00 mg. ,, ,,
Free silica ... ... 11·45 mg. ,, ,,

Diagnosis.—Silicosis, massive and tuberculosis.

Case No. 75.—The patient was a sandstone-mason, aged 56. He worked as a rubble-mason for twenty-two years. A radiograph seven years before his death was reported on as showing advanced silicosis accompanied by tuberculosis. He then complained of cough, later of dyspnoea and loss of weight.

Post-mortem.—The right lung is densely covered with organized adhesions. On section, the upper lobe is the site of a massive consolidation which has a nodular basis. There is a ramifying tuberculous excavation and general caseation. The middle lobe has, in its upper part, a consolidation with a nodular basis as well as a moderate development of silicotic nodules. The lower lobe has a moderate development of silicotic nodules and caseation.

The left lung is covered with adhesions, very dense over the upper lobe which is consolidated in its lateral portion. That lobe is also very much contracted, but there are no definite tuberculous lesions. The medial portion has a moderate number of black, fibrotic nodules. The lower lobe has a consolidation with a nodular basis in its upper part; fibrotic nodules are very few in the lower part. In both lobes there is considerable emphysema. The glands are enlarged, black, calcified, necrotic and probably tuberculous.

The dissecting microscope shows fibrosis of the siliceous type.

Sections.—Sections show siliceous consolidations and nodules with tuberculous changes.

Chemical Analysis.—Ash ... ... 28·85 mg. per gram of dried lung.
Combined silica... ... ... 0·23 mg. ,, ,,
Free silica ... ... 2·55 mg. ,, ,,

Diagnosis.—Silicosis, massive and tuberculosis.

MISCELLANEOUS WORKERS—DUSTY OCCUPATIONS.

Cases Nos. 9, 20, 30, 34, 58.

Case No. 9.—The patient was a foundry dresser and annealing pot cleaner, aged 52. There was a history of debility, loss of weight and cough for four years. A radiograph revealed pulmonary fibrosis. No tubercle bacilli were found in sputum in several examinations. He was a groom in a London bus company until 1909, a station hand in New South Wales until 1920, a foundry dresser in a steel foundry for seven years. His duties were to knock off castings with a percussive machine, and also to work inside annealing pots knocking sand off with a percussive machine and a grinder. An annealing pot is about 4 ft. 6 in. in diameter by 6 ft. 6 in. in length. This work was extremely dusty. No protective breathing apparatus was worn.

Post-mortem.—The pleura of the left lung is much thickened and adherent generally. There is a large cavity in the upper lobe; the cavity is smooth, black walled and crossed by trabeculae. It occupies nearly the whole of the upper lobe and its ramifications extend in areas of consolidation only. In the lower lobe the consolidation is of the cuirass type, one inch thick. The medial portion of the lower lobe was unchanged.

In the right lung, the pleura is dense and adherent generally. The upper lobe is mostly a massive irregular consolidation. The consolidated areas have small cavities with or without gelatinous contents. The lower lobe presents in part a similar character.

The dissecting microscope shows nodular and massive fibrosis of the siliceous type.

Sections.—Sections show massive fibrosis of a siliceous type; there is nothing suggesting tuberculous infection; the walls of the cavities, large and small, show necrotic changes.

Chemical Analysis.—Ash ... ... 27·8 mg. per gram of dried lung.
Combined silica... ... ... 1·1 mg. ,, ,,
Free silica ... ... 4·6 mg. ,, ,,
Carbon ... ... 5·5 mg. ,, ,,

Remarks.—We have referred to this case previously as follows :—

"The third interesting result is the discovery that the lungs of a man who worked with a pneumatic tool cleaning out moulding sand in a steel annealing pot, showed massive fibrosis with non-tubercuIous cavitation in both lungs. The only similar case we are aware of is the one described by Stern (1929) in a man doing the same class of work in a German foundry."

Diagnosis.—Silicosis, massive.

Case No. 20.—The patient was an ore miller, aged 52.—The cause of death was pneumonokoniosis, pneumothorax and cardiac failure. There had been complaint of cough, pain in the chest, and dyspnoea. The radiograph shows an advanced degree of pneumonokoniosis and a very marked pneumothorax of the right side. He worked at ore milling for eight years and was a farmer before this. He crushed quartz, haematite, limestone, talc, ochres, kaolin, fullers' earth and cornish stone, and was gravely exposed to dust at this occupation.

Post-mortem.—When the right pleural cavity was opened, air escaped under some pressure. Right pneumothorax was present and the right lung collapsed to some degree. Numerous dense adhesions were present at both apices, irregularly scattered over lateral and posterior surfaces of both lungs and in interlobar regions. Both lungs showed large patchy areas, yellowish in colour and quite firm, occupying a considerable portion of lung tissue. Marked emphysema (interstitial) was present in both lungs, some areas showing thin-walled bullae standing well out from the surface. Sections of the solid areas sank in water. Numerous yellowish, enlarged, mediastinal glands were present. There was no evidence of tuberculosis. Slight tracheitis and bronchitis were found. The left and right ventricles were dilated and hyperthophied. Some atheroma of aorta and coronary arteries was present (hospital records).

Examination of the lungs after preservation show that they are reddish, all parts being heavily pigmented with oxide of iron. Throughout the lungs, there are large areas of reddish consolidation somewhat irregular and not having any nodular structure. This development of consolidated areas is most marked in the upper lobes. The apex of the right upper lobe has a subpleural area of greyish-black consolidation in which a nodular character can be discerned. The glands are reddish, not greatly enlarged, and not very hard. There are no definite tuberculous changes.

The dissecting microscope shows fibrosis of the siliceous type and perivascular fibrosis of the type produced by non-siliceous dusts.

Sections.—Sections show massive fibrosis of the siliceous type with marked perivascular fibrosis.

Chemical Analysis.—Ash ... ... 109·0 mg. per gram of dried lung.
Combined silica... ... ... 18·4 mg. ,, ,,
Free silica ... ... 41·6 mg. ,, ,,
Carbon ... ... 4·2 mg. ,, ,,

Remarks.—The abnormal amounts of free and combined silica in these lungs and the massive fibrosis which has resulted, is related to an exposure to dense clouds of dusts. Cardiac failure and pneumothorax caused death.

Despite the gross inhalation of oxides of iron which are so easily recognised by their colour, none is found in the alveoli. This is in keeping with other observations in this series of human lungs. Dust inhaled into the alveoli is rapidly removed.

Diagnosis.—Silicosis, massive.

Case No. 30.—The patient was a coal-miner. He died following an accident. His age is unknown. The industrial history is not available.

At the time of his death he was working in the Wallsend pit, Northern field, upper coal measures.

Post-mortem.—The right and left lungs are greyish and oedematous. There are no fibrotic nodules and no consolidations. Perivascular fibrosis with coal-dust cell aggregation was seen in the upper lobes with emphysematous changes. The glands are not enlarged. They are soft and black.

The dissecting microscope shows perivascular fibrosis of the coal-dust type with early nodulation and emphysema.

Sections.—Sections show perivascular fibrosis with some nodulation of the coal-dust type with emphysema and pneumonia.

Chemical Analysis.—Ash ... ... 46·7 mg. per gram of dried lung.
Combined silica... ... ... 4·0 mg. ,, ,,
Free silica ... ... 3·6 mg. ,, ,,
Carbon ... ... 35·5 mg. ,, ,,

Diagnosis.—Pneumonokoniosis, coal-dust type, very early and emphysema.

Case No. 34.—The patient was aged 44. He was employed at the Newcastle Steel Works and died of a failing heart. He worked for the past thirteen years at the Steel Works, where he was employed at the blast furnaces as a moulder's labourer and as a labourer. He complained of exposure to fine, black, shiny dust (? graphite). He was admitted to the Newcastle Hospital suffering from shortness of breath, swelling of ankles, chronic cough, loss of weight and general weakness. There was cardiac hypertrophy, a systolic murmur and blood pressure 230/165. The radiograph of the chest showed no lung abnormality.

Post-mortem.—There was present a double hydrothorax with pneumonic consolidation at the base of each lung with ventricular hyperthrophy and atheroma of aortic valves and aorta.

The right lung is greyish with some black mottling. The lower lobe is consolidated by pneumonic changes. The upper lobe has a little perivascular dust cell aggregation. The glands are soft, greyish-black, and not enlarged.

The left lung presents similar appearances.

The dissecting microscope shows slight perivascular aggregation of dust-cells and pneumonia.

Sections.—Sections show pneumonic changes and very slight perivascular fibrosis.

Chemical Analysis.—Ash ... ... 56·97 mg. per gram of dried lung.
Combined silica... ... ... 2·50 mg. ,, ,,
Free silica ... ... 1·71 mg. ,, ,,
Free carbon ... ... 5·50 mg. ,, ,,

Remarks.—The dust changes in the lungs are very mild. The failure to obtain the early industrial history means that one cannot be sure that the silica, free and combined, was inhaled at the Steel Works.

Diagnosis.—Pneumonia.

Case No. 58.—The patient was a printer, aged 62. He had been engaged at printing all his life and had done a large amount of bronze dusting. Six months before his death, he became short of breath and lost weight, he had no cough or sputum, but from his symptoms and the signs in his chest, he was diagnosed as tuberculous and sent to a sanatorium. The radiographer reported a condition of chronic tuberculosis. He was not accepted at the sanatorium as a case of tuberculosis and, on his death, the post-mortem revealed generalized alveolar carcinoma of both lungs. This case is included in this series as a useful control.

The *Chemical Analysis* did not discover any copper, lead or arsenic in his lungs. These were searched for on account of his history of bronze-dusting.

Chemical Analysis.—Ash ... ... 38·5 mg. per gram of dried lung.
Combined silica... ... ... 0·12 mg. ,, ,,
Free silica ... ... 0·23 mg. ,, ,,

Diagnosis.—Primary alveolar carcinoma.

INDIVIDUALS NOT EXPOSED TO DUST.

Cases Nos. 15, 16.

Case No. 15.—The patient was a railway worker and storekeeper, aged 50. There was no known exposure to dust. He died from cyanide poisoning.

Post-mortem.—The lungs show no abnormality.

Sections.—Sections show no abnormality.

Chemical Analysis.—Ash ... ... 23·5 mg. per gram of dried lung.
Combined silica... ... ... 1·1 mg. ,, ,,
Free silica ... ... 0·82 mg. ,, ,,
Carbon ... ... 4·0 mg. ,, ,,

Remarks.—These lungs were used as a control.

Diagnosis.—No abnormality.

Case No. 16.—The patient was a dealer, aged 43. He had no known exposure to dust. He died from a fractured skull and terminal pneumonia.

Post-mortem.—The lungs show basal pneumonia.

Chemical Analysis.—Ash ... ... 30·2 mg. per gram of dried lung.
Combined silica... ... ... 0·87 mg. ,, ,,
Free silica ... ... 0·27 mg. ,, ,,
Carbon ... ... 3·0 mg. ,, ,,

Remarks.—These lungs were used as a control.

Diagnosis.—Pneumonia.

INDIVIDUALS NOT EXPOSED TO DUST, DEAD OF TUBERCULOSIS.

Cases Nos. 25, 26, 38, 40, 46.

Case No. 25.—The patient was an iron-worker, aged 46. The cause of death was chronic phthisis. There was a three years' history of ill health, cough and loss of weight. The sputum contained tubercle bacilli. The radiograph shows, in both lungs, gross fibrous tuberculosis with cavitation. He was an iron-worker in a foundry for many years.

Post-mortem.—Both lobes of the left lung show generalized, massive adhesions, with gross cavitation and caseation. The right lung shows generalized, massive adhesions. The upper lobe shows gross cavitation and caseation. In the lower lobe are areas of caseation and tuberculous bronchopneumonia.

Sections.—These show tuberculous nodules with giant-cell systems, some difficult or impossible to separate from silicotic nodules.

Chemical Analysis.—Ash ... ... 20·2 mg. per gram of dried lung.
Combined silica... ... ... 0·22 mg. ,, ,,
Free silica ... ... 0·35 mg. ,, ,,
Carbon ... ... 2·0 mg. ,, ,,

Diagnosis.—Pulmonary tuberculosis.

Case No. 26.—The patient was a salesman, aged 50. The cause of death was chronic phthisis and auricular fibrillation. There was a ten years' history of chronic phthisis. He was for seven years a sanatorium inmate.

Post-mortem.—The left lung is covered with adhesions. The upper lobe is the seat of chronic tuberculous changes and very little of it remained. The lower lobe has a few areas of caseation in its upper part.

In the right lung, there are generalized adhesions, especially of the upper lobe. The upper lobe is the seat of chronic tuberculous changes and very little of it remains. The middle lobe shows caseation and fibrosis, the lower lobe small areas of caseation.

Sections.—Sections show tuberculous nodules and caseation with giant-cell systems.

Chemical Analysis.—Ash ... ... 28·5 mg. per gram of dried lung.
Combined silica... ... ... 0·77 mg. ,, ,,
Free silica ... ... 0·54 mg. ,, ,,
Carbon ... ... 4·0 mg. ,, ,,

Diagnosis.—Pulmonary tuberculosis.

Case No. 38.—The patient was a labourer, aged 52. He suffered from chronic tuberculosis for many years. He was in a sanatorium for the twenty years previous to his death. The lungs were selected as a typical example of chronic tuberculosis. There was no known dust exposure.

Post-mortem.—The right lung is covered with adhesions. There is an area of consolidation in the upper lobe which includes a calcified cyst and a calcified nodule. Each is about 0·5 cm. in diameter. The lower lobe shows surprisingly few changes. In the interlobar pleura, there is a ramifying network of caseation.

The left lung is covered with ragged adhesions. The upper lobe has practically disappeared. What remains is a mass of fibrous tissue enclosing small areas of consolidation. The lower lobe shows few changes. Only one nodule is seen and this is calcified.

Sections.—Sections showed tuberculous fibrosis.

Chemical Analysis.—Ash ... ... 43·70 mg. per gram of dried lung.
Combined silica... ... ... 0·44 mg. ,, ,,
Free silica ... ... 0·17 mg. ,, ,,

Remarks.—An example of the chemical analysis of a lung affected by chronic tuberculosis with no dust exposure.

Diagnosis.—Pulmonary tuberculosis.

Case No. 40.—The patient was a labourer, aged 65. He died in a sanatorium from simple acute tuberculosis. His lungs were selected as a control. There was no known dust exposure.

Post-mortem—The Left Lung.—On section, in the axillary plane, there are caseous masses extending from the hilus to the outer aspects of the lungs, there are two hilar areas of caseation about 1·5 cm. in diameter and, in the upper lobe, a small number of fibrotic nodules less than 1 mm. in diameter.

The Right Lung.—This lung has a similar appearance to the left but the upper lobe only is affected.

Sections.—Sections of nodules show a typical tuberculous structure.

Chemical Analysis.—Ash ... ... 21·5 mg. per gram of dried lung.
Combined silica... ... ... 0·22 mg. ,, ,,
Free silica ... ... 1·90 mg. ,, ,,

Remarks.—In the chemical analysis, the figures for ash and combined silica are of a similar order to those found in other tuberculous lungs, Nos. 25, 26 and 33, but the free silica is much higher.

Diagnosis.—Pulmonary tuberculosis.

Case No. 46.—The patient was a storeman and hawker, and had not worked in any dusty occupation He died from simple tuberculosis and his lungs were used as a control.

Post-mortem—Right Lung.—The lung is greyish and covered with poorly developed adhesions, the upper lobe shows generalized tuberculous caseation. The lower lobe shows pneumonic consolidation.

Left Lung.—The lung presents a similar appearance.

Sections.—Sections show tuberculous changes with caseation and giant-cell systems.

Chemical Analysis.—Ash ... ... 15·6 mg. per gram of dried lung.
Combined silica... ... ... 0·087 mg. ,, ,,
Free silica ... ... 0·56 mg. ,, ,,

Remarks.—The amounts of the combined and free silica may be compared with that found in cases Nos. 25, 26, 38 and 40.

Diagnosis.—Pulmonary tuberculosis.

TABLE 1 showing the Classification and Chemical Analysis of Lungs in the Various Groups.

Chemical Analysis.

Case No.	Age.	Dusty Occupations, Mining, etc.		Pathology.	Mg. per Gram of Dried Lung.					Content of Lungs.				Remarks.
		Years of work in.	Years since work in.		Ash.	Free and combined silica.	Combined silica.	Free silica.	Carbon.	Free and combined silica.	Combined silica.	Free silica.	Carbon.	
				Coal Miners, Southern Coalfield.						Grams.	Grams.	Grams.	Grams.	
12	52	27	...	Pneumonokoniosis, siliceous and coal-dust types, massive and tuberculosis.	52·9	15·3	10·6	4·7	85·0	3·7	2·6	1·1	21	Worked three years in headings through sandstone and shale.
13	54	16	0	Pneumonokoniosis, coal-dust type, very early...	37·0	9·0	8·4	0·6	90·0	1·6	1·5	0·1	16	Last colliery, Metropolitan, 16 years.
22	52	34	3	Pneumonokoniosis, siliceous and coal-dust types, marked and emphysema.	88·5	10·5	10·2	0·3	111·8	3·1	3·0	0·1	33	Metropolitan pit work only.
62	66	36	7	Pneumonokoniosis, coal-dust type, massive and emphysema.	67·4	11·7	10·8	0·9	234·0	2·3	2·1	0·2	46	Mt. Kiera, 13 years; Metropolitan pit and and screens, 23 years.
65	61	40	3	Pneumonokoniosis, coal-dust type, massive and tuberculosis.	48·2	9·2	8·2	1·0	108·0	2·6	2·3	0·3	31	Metropolitan pit last 34 years.
67	61	40	8	Pneumonokoniosis, coal-dust type, massive and gross emphysema.	45·1	9·9	7·7	2·2	134·0	1·7	1·3	0·4	23	Mt. Kembla and South Clifton chiefly.
70	68	50	2	Pneumonokoniosis, coal-dust type, marked and emphysema.	59·6	12·8	10·4	2·4	122·0	2·9	2·4	0·5	28	Worked only Old Bulli, Scarborough, and Coalcliff.
78	59	29	1	Pneumonokoniosis, siliceous type, massive and tuberculosis.	53·1	12·9	8·0	4·9	23·4	5·6	3·5	2·1	10	Worked Corrimal, South Bulli and Coalcliff.
				Coal Miners.—Western Coalfield.										
27	62	30	3	Pneumonokoniosis, coal-dust type, marked and emphysema.	23·8	2·2	0·9	1·3	96·0	0·60	0·25	0·35	26	Last colliery, Hermitage, 21 years.
29	71	27	0	Pneumonokoniosis, coal-dust type, massive and emphysema.	32·4	3·5	1·5	2·0	81·5	1·0	0·43	0·57	23	Hermitage colliery, 26 years; shaft sinking, Lucknow, 1 year.
57	51	30	1½	Pneumonokoniosis, coal-dust type, marked and emphysema.	38·0	4·6	2·5	2·1	55·0	0·89	0·48	0·41	11	.....
63	50	30	0	Emphysema	49·0	5·9	4·9	1·0	28·5	1·2	1·0	0·2	6	State Coal Mine, 12 years; Cobar colliery, 3 years.
66	41	23	...	Pneumonia	21·2	0·98	0·30	0·68	7·6	0·14	0·04	0·10	1	.....
73	57	27	2	Pneumonokoniosis, coal-dust type, moderate and emphysema.	26·3	2·7	2·0	0·7	84·5	0·48	0·36	0·12	15	Lithgow colliery, 16 years; State Coal Mine, 11 years.
76	56	19	0	Pneumonokoniosis, coal-dust type, moderate and emphysema.	52·4	7·8	3·9	3·9	88·2	1·9	1·0	0·9	21	Oakey Park pit, 17 years.
				Coal Miners.—Northern Coalfield—Upper Coal Measures.										
1	56	35	...	Pneumonokoniosis, coal-dust type, very early and emphysema.	29·0	7·6	6·6	1·0	16·2	...	...	...	...	Last colliery, Old Lambton, 18 years.
4	77	29	0	Pneumonokoniosis, coal-dust type, very early and gross emphysema.	36·2	3·8	2·9	0·9	28·0	...	...	...	...	Last colliery, Old Glebe, 22 years.
				Coal Miners.—Northern Coal-field—Lower Coal Measures.										
6	...	20	0	Pneumonokoniosis, coal-dust type, very early and emphysema.	30·4	2·6	1·1	1·5	50·0	0·56	0·24	0·32	11	Last colliery, Abermain, 20 years.
31	57	29	2	Pneumonokoniosis. coal-dust type, moderate and emphysema.	54·0	9·5	4·3	5·2	67·5	1·8	0·8	1·0	13	.....
32	45	24	0	No abnormality	23·0	2·9	0·9	2·0	7·5	0·36	0·11	0·25	0·9	Last colliery, Richmond Main, 14 years.
43	66	21	...	Pneumonokoniosis, coal-dust type, moderate and emphysema.	49·1	10·3	7·5	2·8	35·0	1·5	1·1	0·4	5	Last colliery, Richmond Main, 15 years.
48	50	17	0	No abnormality	30·5	7·3	2·1	5·2	14·0	1·0	0·30	0·70	2	Last colliery, Richmond Main, 13 years; 1 year tin mining.
59	56	44	...	Pneumonokoniosis, coal-dust type, early; emphysema; carcinoma.	27·8	1·7	0·3	1·4	70·5	0·31	0·06	0·25	13	Aberdare colliery, 27 years.
60	53	30?	2	Pneumonokoniosis, coal-dust type, moderate and emphysema.	29·5	1·1	1·0	0·1	68·5	0·28	0·25	0·03	17	Abermain; earlier years in Upper coal measures.

Chemical Analysis—continued.

Case No.	Age.	Dusty Occupations, Mining, etc.		Pathology.	Mg. per Gram of Dried Lung.					Content of Lungs.				Remarks.
		Years of work in.	Years since work in.		Ash.	Free and combined silica.	Combined silica.	Free silica.	Carbon.	Free and combined silica.	Combined silica.	Free silica.	Carbon.	
				Coal Miners.—British and Australian Coalfields.						Grams.	Grams.	Grams.	Grams.	
2	56	40	0	Pneumonokoniosis, coal-dust type, early.....	27·7	2·4	1·9	0·5	42·0	0·66	0·52	0·14	12	English pits, 20 years; Australian collieries, 20 years.
8	54	...	0	Pneumonokoniosis, coal-dust type, very early	37·5	5·6	2·4	3·2	74·5	0·78	0·33	0·45	10	English pits; N.S.W. Stockton Borehole, 6 years.
11	48	34	0	No abnormality	36·2	2·9	2·2	0·7	30·2	1·2	0·9	0·3	12	English pits, 11 years; N.S.W. coalfields, 23 years.
28	65	...	0	Pneumonokoniosis, coal-dust type, very early. and emphysema.	56·5	15·2	11·0	4·2	72·5	2·6	1·9	0·7	12	Only worked 9 years in Australia, Northern coalfield.
49	42	27	0	Emphysema	31·4	6·3	1·5	4·8	23·0	0·9	0·21	0·69	3	English pits, 7 years; Northern coalfield, 20 years.
53	58	46	½	Pneumonokoniosis, coal-dust type, marked and emphysema.	39·3	8·6	6·9	1·7	150·0	1·7	1·4	0·3	30	Lanarkshire pits, 26 years; Western field, 17 years.
72	54	42	3	Pneumonokoniosis, coal-dust type, marked	45·0	5·9	4·0	1·9	124·0	2·2	1·5	0·7	46	Lanarkshire pits, 21 years; Broken Hill, ½ year; Southern coalfield, 20 years.
80	70	58	...	Pneumonokoniosis, coal-dust type, early	34·6	6·0	3·9	2·1	46·0	...	...	...	...	Wales, 30 years; New South Wales, 28 years.
				Coal and Metalliferous Miners.										
3	59	29	16	Silicosis, early	63·0	14·3	7·2	7·1	15·0	...	...	...	...	Coal-mining, 13 years; metalliferous mining, 16 years.
5	50	19	0	Silicosis, massive	70·0	26·8	10·8	16·0	8·5	8·3	3·3	5·0	3	Metalliferous mining, 10 years; coal-mining and shaft sinking, 9 years.
7	74	60	3	Pneumonokoniosis, coal-dust type, very early	40·8	4·3	3·6	0·7	51·2	1·3	1·1	0·2	15	Northern coalfield, 44 years; metalliferous miner, 3 years.
10	45	27	2	Pneumonokoniosis, siliceous type, marked ...	55·5	20·1	14·3	5·8	13·2	5·1	3·6	1·5	3	Northern coalfield, 21 years; Mt. Lyell and Bendigo, 6½ years.
21	49	15	...	Pneumonia	54·7	7·8	6·1	1·7	9·8	2·1	1·6	0·5	3	Metalliferous mining, 6 years; coal-mining, 9 years.
35	81	53	15	Pneumonokoniosis, coal-dust type, early and emphysema.	43·2	7·5	4·4	3·1	43·5	1·2	0·7	0·5	7	Coal-mining, 50 years; metalliferous mining, 3 years.
39	49	25	0	Silicosis, massive	51·3	14·9	3·3	11·6	12·5	4·5	1·0	3·5	4	Metalliferous mining, 12 years; coal-mining, 13 years.
41	50	30	5	Silicosis, massive and tuberculosis	43·7	4·7	0·7	4·0	3·3	0·9	0·13	0·77	0·6	Shaft sinking, 8 years; coal-mining, 8 years.
61	54	26	0	Pneumonokoniosis, siliceous type, marked and tuberculosis.	52·7	13·9	11·6	2·3	15·0	4·1	3·4	0·7	4	Metalliferous mining, 3 years; coal-mining, 23 years.
				Metalliferous Miners.										
14	52	24	...	Pneumonokoniosis, siliceous type, massive and tuberculosis.	81·8	20·3	12·1	8·2	8·5	8·8	5·2	3·6	...	Victoria, Broken Hill, and Western Australia.
18	45	...	...	Pneumonokoniosis, siliceous type, early	25·5	7·7	4·5	3·2	8·0	1·8	1·1	0·7	...	.....
23	65	31	3	Pneumonokoniosis, siliceous type, massive and tuberculosis.	76·4	28·3	18·4	9·9	6·8	10·4	6·8	3·6	...	Metalliferous mining, quartz and serpentine, 12 years.
37	57	12	...	Silicosis, massive and tuberculosis	30·1	4·7	0·7	4·0	4·2	1·3	0·2	1·1	...	Metalliferous mining, Australian States.
42	58	26	6	Pneumonokoniosis, siliceous type, moderate ...	111·5	6·3	5·1	1·2	3·0	1·1	0·9	0·2	...	Metalliferous mining, Broken Hill, 14 years; gold-mining, 2 years.
44	49	10	10	Silicosis, massive and tuberculosis	31·1	6·9	1·4	5·5	6·5	1·2	0·2	1·0	...	Metalliferous mining, Tasmania, New Zealand, New South Wales and Victoria.
51	62	17	16	Silicosis, marked and tuberculosis	44·4	9·8	2·5	7·3	...	2·6	0·7	1·9	...	Cobar, 7 years; Broken Hill, 10 years.
54	59	...	1	Pneumonokoniosis, siliceous type, massive and tuberculosis.	66·1	19·8	10·7	9·1	...	8·8	4·8	4·0	...	Metalliferous mining, Australian states.

TABLE I.—Table showing the Classification and Chemical Analysis of Lungs in the Various Groups.—*continued.*

Chemical Analysis—continued.

Case No.	Age.	Dusty Occupations, Mining, etc.		Pathology.	Mg. per Gram of Dried Lung.					Content of Lungs.				Remarks.
		Years of work in.	Years since work in.		Ash.	Free and combined silica.	Combined silica.	Free silica.	Carbon.	Free and combined silica.	Combined silica.	Free silica.	Carbon.	
										Grams.	Grams.	Grams.	Grams.	
				Metalliferous Miners—continued.										
55	60	25	17	Silicosis, massive and tuberculosis	62·0	19·4	7·7	11·7	...	4·8	1·9	2·9	...	Metalliferous mining, 25 years.
56	53	32	½	Silicosis, moderate and tuberculosis	36·6	10·8	2·9	7·9	...	2·3	0·6	1·7	...	Quartz mining, 30 years; coal-mining, 2 years.
77	59	...	30	Pneumonokoniosis, siliceous type, massive and tuberculosis.	62·2	21·2	13·7	7·5	4·8	6·4	4·1	2·3	...	No mining work for 30 years.
				Sydney Sandstone and Metalliferous Miners.										
36	59	...	...	Silicosis, massive	43·2	13·2	6·1	7·1	8·1	2·4	1·1	1·3	...	Metalliferous mining, 30 years; sandstone work, 9 years.
47	62	16	5	Silicosis, massive and tuberculosis	43·5	16·1	7·7	8·4	...	3·1	1·5	1·6	...	Mt. Lyell, 5 years; Bendigo, 3 years; Sydney sandstone, 8 years.
71	60	...	...	Silicosis, massive and tuberculosis	46·3	8·7	4·8	3·9	2·7	4·6	2·5	2·1	...	Sandstone quarryman and metalliferous miner.
81	64	21	4	Silicosis, massive	64·8	15·7	6·9	8·8	19·5	...	...	...	...	Metalliferous miner, 18 years; Sydney sandstone, 3 years.
				Sydney Sandstone Workers.										
17	51	26	...	Silicosis, massive and tuberculosis	18·3	4·7	1·3	3·4	1·5	...	...	...	...	.....
19	49	...	...	Silicosis, moderate and tuberculosis	21·1	8·9	1·9	7·0	3·0	1·4	0·3	1·1	...	.....
24	68	27	...	Silicosis, massive	31·8	8·7	3·1	5·6	5·8	2·3	0·8	1·5	...	Sydney sandstone, 17½ years; mixed stone, 9 years.
33	56	17	1	Silicosis, massive and tuberculosis	30·7	2·1	1·0	1·1	2·0	...	...	...	...	Granite mason; also England and Wales.
45	42	...	...	Silicosis, massive and tuberculosis	30·3	7·5	2·1	5·4	...	1·3	0·4	0·9	...	.....
52	47	5	7	Silicosis, massive and tuberculosis	40·7	3·9	0·7	3·2	...	1·4	0·3	1·1	...	.....
68	62	20	5	Silicosis, massive and tuberculosis	52·8	13·5	2·0	11·5	...	3·8	0·6	3·2	...	
75	56	22	...	Silicosis, massive and tuberculosis	28·9	2·8	0·2	2·6	1·0	0·6	0·04	0·56	...	.....
				Miscellaneous Workers in Dusty Occupations.										
				Foundry-dresser.										
9	52	7	0	Silicosis, massive	27·8	5·6	1·0	4·6	5·5	1·5	0·3	1·2	...	Foundry-dresser, dressed sand from annealing pots with percussive tool.
				Ore-miller.										
20	52	8	0	Silicosis, massive	109·0	60·0	18·4	41·6	4·2	...	...	...	...	Crushed quartz, haematite, talc, kaolin, etc.
				Industrial History incomplete.										
30	...	...	0	Pneumonokoniosis, coal-dust type, very early and emphysema.	46·7	7·6	4·0	3·6	35·5	2·2	1·2	1·0	...	Wallsend colliery; killed at work.
				Steel Works Employee.										
34	44	13	0	Pneumonia	57·0	4·2	2·5	1·7	5·5	0·92	0·55	0·37	...	Exposed to graphite and other dusts as a steel moulder.
				Printer.										
58	62	...	0	Alveolar carcinoma	38·5	0·35	0·12	0·23	...	...	...	...	...	Engaged bronze dusting. No copper, arsenic or lead was found in the lungs.
				Individuals not Exposed to Dust.										
15	50	...	...	No abnormality	23·5	1·9	1·1	0·8	4·0	...	...	...	...	Railway worker.
16	43	...	...	Pneumonia	30·2	1·14	0·87	0·27	3·0	...	...	...	...	Dealer.
				Individuals, not Exposed to Dust, Dead of Tuberculosis.										
25	46	...	...	Pulmonary tuberculosis	20·2	0·56	0·22	0·34	2·0	0·17	0·07	0·10	...	Iron worker in a foundry.
26	50	...	...	Pulmonary tuberculosis	28·5	1·31	0·77	0·54	4·0	0·21	0·12	0·09	...	.....
38	52	...	...	Pulmonary tuberculosis	43·7	0·61	0·44	0·17	2·0	0·11	0·08	0·03	...	.....
40	65	...	...	Pulmonary tuberculosis	21·5	2·12	0·22	1·90	...	0·49	0·05	0·44	...	.....
46	...	...	...	Pulmonary tuberculosis	15·6	0·65	0·09	0·56	...	0·10	0·01	0·09	...	.....

TABLE 2.—Table showing the Full Chemical Analysis of Lungs, in Numerical Order.

No.	Total Dry Weight (in Grams).	Ash (in Grams).	Milligrams Per Gram of Dried Lung.								
			Ash.	Combined Silica (SiO_2).	Free Silica (SiO_2).	Alumina (Al_2O_3).	Ferric Oxide (Fe_2O_3).	Calcium Oxide (CaO).	Magnesium Oxide (MgO)	Phosphoric Anhydride (P_2O_5).	Free Carbon (C).
1	49·0	1·42	29·00	6·60	0·98	3·68	3·92	0·57	0·51	4·75	16·2
2	139·0	4·13	27·70	1·87	0·52	4·71	3·48	...	...	...	42·0
3	112·0	7·06	63·0	7·16	7·13	8·87	6·74	...	...	...	15·0
4	103·0	3·70	36·2	2·90	0·90	2·30	5·50	...	...	...	28·0
5	77·8	5·44	70·0	10·80	16·00	8·30	9·00	5·30	0·90	15·70	8·5
6	108·0	3·28	30·4	1·10	1·50	1·20	6·30	1·80	0·70	12·60	50·0
7	142·0	5·80	40·8	3·60	0·70	4·20	8·50	1·20	0·70	12·80	51·2
8	70·5	2·65	37·5	2·40	3·15	3·58	4·34	1·18	0·71	13·60	74·5
9	67·2	1·87	27·8	1·03	4·55	1·24	4·90	1·17	0·54	10·00	5·5
10	127·5	7·04	55·5	14·30	5·80	8·75	8·42	0.89	0·72	11.40	13·2
11	168·0	6·10	36·2	2·20	0·69	2·00	8·35	0·87	0·55	10·80	30·2
12	122·0	6·45	52·86	10·60	4·66	10·15	5·70	4·16	0·58	11·62	85·0
13	87·5	3·24	37·0	8·40	0·60	7·30	7·00	0·59	0·32	8·00	90·0
14	57·5	4·70	81·8	12·10	8·20	9·00	6·20	15·20	0·95	20·50	8·5
15	87·5	2·05	23·5	1·03	0·82	1·40	2·82	0·56	0·31	12·20	4·0
16	74·0	2·23	30·2	0·87	0·27	0·45	4·35	1·45	...	10·30	...
17	55·0	1·00	18·25	1·30	3·42	0·97	2·62	0·77	0·29	7·00	1·5
18	47·0	1·20	25·5	4·55	3·17	4·22	4·00	0·51	...	6·98	8·0
19	25·4	0·53	21·1	1·90	7·00	1·50	4·90	...	...	...	3·0
20	31·2	3·40	109·0	18·40	41·60	12·50	21·80	1·10	0·50	8·00	4·2
21	93·7	5·12	54·65	6·12	1·64	4·25	5·40	1·02	0·92	19·40	9·75
22	99·0	8·72	88·50	10·15	0·32	9·35	3·55	26·75	1·63	28·60	111·8
23	134·2	10·22	76·40	18·35	9·93	15·63	5·45	1·82	1·39	12·77	6·75
24	43·4	1·38	31·80	3·11	5·60	1·60	7·30	2·08	0·42	10·75	5·75
25	153·5	3·10	20·2	0·22	0·34	0·48	1·60	3·60	0·49	10·20	2·0
26	79·0	2·25	28·5	0·77	0·54	0·49	2·90	7·70	0·50	12·00	4·0
27	136·5	3·26	23·8	0·90	1·28	1·42	5·50	1·33	0·47	10·60	96·0
28	86·6	4·87	56·45	10·95	4·22	8·85	9·85	1·21	0·20	13·00	72·50
29	148·0	4·80	32·40	1·50	2·02	1·80	4·12	3·25	0·61	11·70	81·50
30	142·5	6·54	46·70	4·00	3·60	3·80	16·40	1·40	0·63	10·30	35·50
31	93·8	5·07	54·05	4·28	5·20	4·55	13·40	2·10	0·85	15·80	67·50
32	59·5	1·37	23·0	0·90	2·00	2·00	2·62	0·70	0·37	9·50	7·50
33	58·6	1·80	30·7	1·00	1·14	0·97	11·40	0·70	0·27	12·30	2·00
34	109·7	6·25	56·97	2·50	1·71	2·00	6·68	0·45	0·41	10·55	5·50
35	83·0	3·58	43·20	4·40	3·05	3·80	12·20	0·86	0·08	8·70	43·50
36	90·8	3·91	43·20	6·08	7·13	5·68	2·35	2·92	0·77	10·58	8·05
37	114·3	3·45	30·10	0·66	4·05	1·82	2·62	1·76	0·55	14·20	4·2
38	87·3	3·81	43·70	0·44	0·17	0·42	2·62	17·50	0·65	18·60	2·00
39	76·0	3·90	51·3	3·28	11·65	3·37	6·05	7·60	0·66	14·55	12·5
40	116·7	2·51	21·5	0·22	1·90	0·72	2·40	1·38	0·50	9·90	...
41	100·5	4·40	43·7	0·64	4·03	1·33	3·65	9·32	0·90	13·73	3·28
42	84·0	9·36	111·5	5·12	1·22	3·56	4·12	45·78	1·49	33·30	3·0
43	72·0	3·54	49·10	7·45	2·82	2·76	5·28	2·68	0·53	12·40	35·0
44	79·4	2·47	31·1	1·43	5·48	3·06	3·46	0·91	0·48	11·95	6·50
45	86·0	2·60	30·3	2·10	5·40	3·66	3·32	0·89	0·54	10·40	...
46	74·2	1·16	15·6	0·09	0·56	0·23	1·64	0·78	0·34	8·05	...
47	77·0	3·35	43·5	7·68	8·38	6·60	4·50	0·81	0·67	10·10	...
48	68·45	2·09	30·5	2·07	5·25	3·56	2·94	0·86	0·45	10·90	14·00
49	72·2	2·27	31·4	1·46	4·80	3·47	3·69	0·95	0·55	12·00	23·00
51	134·3	5·97	44·4	2·54	7·30	4·30	9·22	2·66	0·61	12·50	...
52	139·2	5·68	40·7	0·71	3·18	0·86	4·22	9·45	0·60	15·90	...
53	98·75	3·88	39·3	6·90	1·73	6·05	9·35	1·47	0·56	7·50	150·0
54	111·3	7·35	66·1	10·65	9·12	9·00	6·40	7·32	0·86	16·80	...
55	123·1	7·63	62·0	7·70	11·65	6·95	6·37	8·00	1·08	15·60	...
56	106·7	3·90	36·6	2·88	7·92	5·50	2·60	1·90	0·72	10·80	...
57	77·0	2·92	38·0	2·51	2·10	2·26	3·75	5·95	0·90	13·40	55·0
58	61·0	2·35	38·5	0·12	0·23	0·21	1·44	0·56	0·94	17·40	...
59	71·0	1·97	27·75	0·31	1·42	0·83	4·50	1·18	0·59	13·00	70·5
60	127·0	3·74	29·50	1·03	0·06	0·52	3·45	1·18	0·64	10·20	68·5
61	103·7	5·46	52·65	11·60	2·30	8·75	5·45	1·29	1·00	12·20	15·0
62	99·0	6·67	67·37	10·80	0·86	20·20	7·28	1·48	0·50	10·90	234·0
63	99·2	4·86	49·0	4·90	1·00	5·60	4·20	1·96	0·70	12·00	28·5
65	115·6	5·48	48·26	8·15	1·00	10·00	5·80	1·48	0·60	12·60	108·0
66	73·8	1·56	21·15	0·30	0·68	0·60	2·05	0·90	0·45	7·72	7·00
67	83·6	3·77	45·10	7·70	2·22	10·45	8·00	1·58	0·52	11·00	134·0
68	112·2	5·93	52·85	2·00	11·45	1·58	11·40	4·60	0·42	16·20	...
70	113·7	7·75	59·0	10·42	2·40	13·20	10·20	1·58	0·60	10·60	122·0
71	214·0	9·89	46·3	4·78	3·88	3·95	2·13	1·63	0·75	13·01	2·71
72	147·8	6·68	45·00	3·96	1·90	4·32	4·82	1·85	0·59	14·00	124·0
73	87·6	2·29	26·30	2·02	0·71	1·70	4·75	1·34	0·25	7·25	84·5
75	112·15	3·24	28·85	0·23	2·55	0·56	2·08	6·05	0·52	6·22	1·00
76	118·70	6·22	52·4	3·96	3·87	3·72	10·20	2·02	0·58	11·70	88·2
77	126·4	7·90	62·20	13·70	7·50	9·10	4·15	6·28	0·96	13·15	4·80
78	145·75	7·70	53·1	8·04	4·85	6·53	5·52	2·68	0·82	13·28	23·35
80	95·4	3·30	34·59	3·92	2·10	4·20	8·10	1·20	0·60	8·10	46·00
81	85·60	5·55	64·84	6·90	8·75	6·55	15·00	3·22	0·88	14·50	19·50

SECTION II.

Metropolitan Combined Sanitary Districts of Sydney.

Report of the Metropolitan Medical Officer of Health for the Year 1936.

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To the Director-General of Public Health.

Sir,

I have the honour to present this, my first report, on the health conditions of the Metropolitan Area* of Sydney for the year 1936.

I took over the duties of Metropolitan Medical Officer of Health on 21st September, 1936, in succession to the Late Lt.-Col. Purdy, D.S.O., who had filled the position with distinction for nearly twenty-five years.

In the Metropolitan Combined Sanitary Districts of Sydney are included the City of Sydney, and fifty-three municipalities with Warringah and Hornsby Shires.

In the section "Causes of Deaths" in the metropolis, statistics are calculated for that area of the metropolis which excludes Cabramatta and Canley Vale, Dundas, Ermington and Rydalmere, Fairfield, Holroyd, Hornsby Shire, Ingleburn, Liverpool, Warringah Shire and Port Jackson.

The component local authorities, in the main, maintain municipal health departments respectively, under the direction of a Chief Health Inspector, or Health Inspector. An important advance has been made by the City of Sydney in the appointment of a full-time City Health Officer, the present appointee being Dr. T. Lewis Dunn, until recently Medical Officer of Health of the Hunter River Combined Sanitary Districts.

Population.—At the Census of 30th June, 1933, the population of the Metropolitan Area was 1,304,417, and of the City of Sydney, 88,308. The Government Statistician's estimate of the population at 31st December, 1936, was 1,341,130, and the mean population for the year 1936, 1,332,060.

Births (*Live*).—Showing an increase of 919 births over 1935, 19,037 live births were registered in the Metropolitan area in 1936, equivalent to a rate of 14·29 per 1,000 of the population, an increase of 0·59 per 1,000 of the population on the rate for 1935.

Male births numbered 9,752, and females 9,285, being a ratio of 105 males to 100 females. There were 883 ex-nuptial births, equivalent to 4·64 per cent. of the total births, or 0·66 per 1,000 of the population.

Births (*Still*).—632 still-births were registered in 1936, equivalent to 3·21 per cent. of all births (live and still) and representing a rate of 0·47 per 1,000 of the population.

Deaths.—There were 13,210 deaths registered in 1936, giving a rate of 9·92 per 1,000 of the population as opposed to 13,368 deaths in 1935, which gave a rate of 10·11 per 1,000 of the population. (See Table 1 on page 146.)

Infant Mortality.—792 deaths were recorded of children under one year of age, equivalent to a rate of 41·60 per 1,000 births as opposed to a rate of 35·61 for 1935. The rise was mainly caused by prematurity, pneumonia and whooping cough.

Causes of Deaths in the Metropolis.

Diseases of the Heart.—3,239 deaths were recorded in this section, representing a rate of 257 per 100,000, and thus heading the list of "Causes of Death" as in 1935. 1,457 of these were in males and 1,782 in females. 13 males and 19 females were under 25 years of age; 46 males and 42 females from 25 to 39 years; 875 males and 526 females from 40 to 69 years; and 847 males and 870 females were over 70 years. The age of one male was not stated.

Acute and chronic rheumatism, chronic arthritis, etc., accounted for 74 deaths. 23 of these were in persons of under 20 years; 15 were from 20 to 39 years; 18 from 40 to 69 years; and 18 from 70 years of age and over.

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*In this and future reports "Metropolitan Area" comprises the *City of Sydney; and Municipalities* of:—

Alexandria	Drummoyne	Ingleburn	Parramatta
Annandale	Dundas	Kogarah	Petersham
Ashfield	Eastwood	Ku-ring-gai	Randwick
Auburn	Enfield	Lane Cove	Redfern
Balmain	Ermington and Rydalmere.	Leichhardt	Rockdale
Bankstown	Erskineville	Lidcombe	Ryde
Bexley	Fairfield	Liverpool	St. Peters
Botany	Glebe	Manly	Strathfield
Burwood	Granville	Marrickville	Vaucluse
Cabramatta and Canley Vale	Holroyd	Mascot	Waterloo
Canterbury	Homebush	Mosman	Waverley
Concord	Hunter's Hill	Newtown	Willoughby
Darlington	Hurstville	North Sydney	Woollahra
		Paddington	

and *Shires* of Hornsby and Warringah.

342 males and 187 females died from diseases of the coronary arteries and 40 males and 17 females died of angina pectoris.

Syphilis caused the deaths of 27 males and 9 females respectively. Of these, 3 males and 1 female were under one year of age.

Four men and 7 women died from alcoholism (acute and chronic).

Cancer.—The number of deaths from cancer continues to rise, 1,551 deaths—704 males and 847 females—having been recorded for 1936. The rise is more marked in females than in males. The public is again advised to seek early skilled medical advice.

Bright's Disease (acute and chronic), caused 797 deaths—423 males and 374 females.

Pneumonia, with fourth place, caused 787 deaths—450 males and 337 females. 299 deaths were due to broncho-pneumonia; 352 to lobar pneumonia; 131 to pneumonia (unspecified); and 5 to capillary bronchitis.

Tuberculosis.—599 deaths occurred, of which 543 were due to tuberculosis of the lungs; 23 to tubercular meningitis; and 33 to other tubercular diseases. With the advent of the Act for better housing, hopes rise high for an acceleration of the fall in the tuberculosis rate, once the influence of this new Act has been felt in the rehousing of the people in certain overcrowded districts of the metropolitan area.

Deaths from Accidents.—The deaths in this section continue to mount. After close observance, it would appear that people take too many chances on our streets, expecting too often the driver of the vehicle to take all precautions, when a little more co-operation between the pedestrian and the driver would make all the difference. All should put into effect that excellent advice "First look to the Right and then to the Left" before essaying to cross a street. At the same time, motorists might be prepared to be less keen to "get there under the hour."

Five hundred and sixty-three persons (407 males and 156 females) were fatally injured, an increase of 59 on the figures for 1935, and 131 on 1934.

Accidents from railways and tramways caused 51 deaths, of which 11 were women; motor vehicles, 235 (183 males and 52 females); and other land transport accidents, 22 (20 males and 2 females).

Epidemic Diseases.

Diphtheria.—3,189 cases were notified with 103 deaths, of which 58 were of children under 5 years of age.

It is a matter of grave concern that only a small proportion of the parents of children in the metropolitan area have seized the opportunity to protect their children by means of immunization. Daily, one is filled with deep regret as the numbers of notifications of cases roll in every morning, especially when these are followed up by death notices. Parents must not wait until it is too late when a valuable innocent life has been sacrificed on the altar of procrastination.

It is indeed a truism that no child nowadays contracts diphtheria but with the consent of the parents.

A clinic is maintained at the Department of Health, Winchcombe House, Bridge-street, but this can only touch the fringe of the population. Parents, therefore, should take their children to the family doctor or call on the municipal council to make the necessary arrangements publicly.

Scarlet Fever.—There were 2,698 cases and 15 deaths, an increase of 2 on the previous year. The death rate, therefore, for 1936, is 1·19 per 100,000 of the population. Three of the deaths were in children under 5 years of age.

Generally, scarlet fever still continues to run a mild course, and quite a number of cases have been overlooked until peeling has given the clue to the constitutional upset.

Typhoid Fever.—53 cases and 7 deaths occurred in 1936.

The majority of the cases occurred in unsewered areas. The disease again broke out in Auburn towards the end of the year. Children predominated, especially at the commencement of the outbreak, which has continued into 1937.

Careful inquiry revealed that many of the children had been playing in the Duck Creek, which receives much of the house drainage of the area, and which is carried to a large extent in spade-cut channels overgrown with weeds and holding stagnant water. Mosquitoes—*culex fatigans*—were found to be breeding prolifically in these gutters.

Bacteriological examination of the waters revealed a high count for *B. coli, B. Welchii* and *Streptococcus faecalis*. It is, therefore, apparent that drainage conditions favour to a high degree the spread of typhoid fever. In 1935 there had been 15 cases of typhoid fever. It is, therefore, reasonable to postulate that the gutters might be receiving typhoid bacilli from some carrier. Conditions were thus favourable for the occurrence of a large outbreak.

In addition, it was found that the 1935 cases were associated with one particular milk run, an employee of which had suffered from typhoid in 1933. The 1935 series came to an end when the employee had been away for three weeks, but four more were notified after his return. This man was carefully investigated in 1935 with negative results.

On going to press, it is significant to note that a fair proportion of the cases had been supplied with milk from this dairy, but bacteriological investigation of all the employees at the dairy at the commencement of the outbreak and repeated at intervals some weeks later failed to reveal a carrier.

However, by arrangement with the chairman of the Metropolitan Milk Board, inspectors of that authority were detailed to keep the dairy and others in Auburn under very close supervision.

(As cases have occurred in 1937, a correlation has been shown between the coming and going of another employee of the aforesaid dairy. Examination failed to reveal any evidence of *B. typhosus*.)

This outbreak once again emphasizes the important fact that for the safety of the public health all milk in closely settled districts such as pertains in the metropolitan area should first be pasteurized and then put up for sale in STERILE bottles.

In addition, I am of the opinion that dairy cattle should not be kept in built-up areas where a sufficiency of pasturage is not obtainable.

Regarding the drainage of the area, in view of the repeated outbreaks of typhoid fever, the installation of sewerage by the Metropolitan Water, Sewerage and Drainage Board cannot come too quickly.

Until this eventuates it will be necessary to clean and disinfect the gutters continually, ensure that all earth closets are fly-proof, and place the Duck River and its tributaries out of bounds as far as possible for children.

TABLE I.

SHOWING Population, Density of Population, and Deaths from certain Diseases in the Municipalities of the Metropolitan Combined Sanitary Districts for the year 1936. The figures represent residents of the Areas named who died in New South Wales.

Municipality.	Estimated Mean Population, 1936.	Average Density of Population per acre, 31st Dec., 1936.	Deaths, 1936.				
			All Causes.	Diarrhoeal Diseases, including Enteritis.	Epidemic Diseases.	Tuberculosis of Respiratory System.	All Tubercular Diseases.
City of Sydney	87,640	27·26	1,207	8	14	70	79
Alexandria	8,940	8·44	101	...	8	5	6
Annandale	12,180	35·09	120	1	5	8	9
Ashfield	39,900	19·64	434	2	5	15	17
Auburn	20,320	7·88	166	...	2	14	15
Balmain	28,080	28·66	317	...	7	10	10
Bankstown	26,440	1·40	217	2	7	15	16
Bexley	20,950	11·06	185	...	3	8	9
Botany	8,590	3·99	83	...	4	6	7
Burwood	19,810	17·99	209	3	...	9	10
Canterbury	80,740	9·85	623	6	17	35	39
Concord	23,630	8·77	166	4	2	5	5
Darlington	3,000	55·00	38	...	2	...	...
Drummoyne	29,850	15·36	242	1	7	9	9
Dundas	6,280	2·36	52	1	...	2	2
Eastwood	3,150	1·08	18	...	1	2	2
Enfield	14,950	8·96	128	1	2	2	3
Ermington and Rydalmere	2,390	1·18	37	...	...	2	2
Erskineville	6,610	35·27	65	...	2	...	1
Glebe	19,690	37·84	207	1	4	9	10
Granville	20,080	5·03	168	5	4	7	8
Holroyd (Pitt and Merrylands Wards)	8,720	4·02	67	...	5	4	4
Homebush	3,200	5·39	40	...	1	1	1
Hunter's Hill	9,190	6·53	67	...	1	2	2
Hurstville	23,410	3·89	201	...	4	10	11
Kogarah	31,660	6·68	237	1	4	10	10
Ku-ring-gai	30,160	1·51	241	2	4	12	12
Lane Cove	15,660	6·17	120	3	2	4	4
Leichhardt	30,310	26·27	283	3	12	13	13
Lidcombe	17,530	3·37	333	3	3	10	10
Manly	24,240	7·87	270	1	5	5	8
Marrickville	45,680	24·27	506	1	8	17	17
Mascot	14,970	6·84	121	1	6	6	7
Mosman	24,330	11·45	234	1	1	5	6
Newtown	25,090	52·08	270	3	5	17	21
North Sydney	50,440	20·08	562	3	12	20	24
Paddington	24,600	58·27	295	1	8	10	12
Parramatta	18,500	8·35	288	2	7	11	13
Petersham	27,230	32·09	280	2	13	12	13
Randwick	80,690	9·54	755	5	17	34	37
Redfern	18,590	45·79	252	4	7	19	20
Rockdale	40,200	7·94	329	3	9	13	13
Ryde	28,850	4·21	242	1	11	13	14
St. Peters	12,560	13·92	127	...	2	5	5
Strathfield	12,610	6·92	123	2	2	1	1
Vaucluse	7,560	9·60	56	1	1	1	1
Waterloo	11,690	14·15	103	2	1	5	5
Waverley	58,230	26·96	486	4	7	15	17
Willoughby	43,820	8·10	388	1	9	24	25
Woollahra	36,040	19·44	376	7	6	11	14
Total, Metropolis	1,258,980	8·08	12,435	92	270	543	599
Cabramatta and Canley Vale	6,760	·87	53	1	2	6	6
Fairfield	9,330	·59	83	...	2	2	2
Holroyd (Guildford and Wentworth Wards)	8,100	1·11	55	1	2	2	2
Hornsby Shire	23,420	·19	273	4	1	25	28
Ingleburn	1,990	·16	10	...	...	1	1
Liverpool	6,610	·25	114	1	3	6	6
Warringah Shire	16,870	·26	187	2	1	4	6
	73,080	.....	775	9	11	46	51
Total Combined Metropolitan Sanitary Districts	1,332,080	.....	13,210	101	281	589	650

In some of the municipalities, the population is confined to small areas, with large unpopulated spaces surrounding, consequently the density per acre is small in such instances.

Anterior Poliomyelitis.—Nine cases, of which 7 died, occurred in 1936, as opposed to 77 cases and 6 deaths in 1935. These cases occurred spasmodically, each in a different municipality.

One case (A), occurred in a preparatory boarding school for boys. The boy in question had not been robust and previous to this illness had suffered from boils, septic tonsils and otitis media.

He had been permitted to spend the week-end previous to his falling ill at home, and for portion of the time had attended a tidal swimming bath. Five days later he complained of weakness of the left side, which became pronounced as if he were suffering from a stroke. He was removed to hospital where the diagnosis of anterior poliomyelitis was confined serologically. Extension of the paralysis was rapid, and the Drinker apparatus was used, but without success.

This case is mentioned, as it is desired to utter a warning to all persons in charge of children at swimming baths, especially when anterior poliomyelitis is epidemic, to endeavour to prevent children remaining unclothed for too long, when shivering commences and the vitality of the child becomes very low.

As had been noticed during the Queensland epidemic of 1930, symptoms of a mild nature were observed in two of the other boarders. One (B) complained of abdominal pains on the 21st September, 1936, with no temperature. On the 23rd, temperature had risen to 100° F., and severe diarrhoea had set in; on 25th, pains in calves of legs, which disappeared on the 28th. Temperature fluctuated for several days. The third boy (C) suffered from a suspicious "cold in the head."

Action Taken.—The room-mates of (A) were isolated in the school sanatorium. Cases (B) and (C) were isolated in their respective rooms. The headmaster's son, who had been in close touch with fatal case (A), was isolated at home. He remained perfectly fit. Attention was given to spacing of beds in dormitories, spacing of pupils in class rooms, ventilation, sterilization of eating utensils by boiling, personal hygiene, and the pupils were kept in the open air as much as possible.

A nasal douche and gargle of Acriflavine in Saline was prescribed and used night and morning.

No other cases occurred.

Typhus Fever (Brill's Disease).—Three cases were reported in 1936.

On receipt of notification of a case, an immediate investigation is made of the patient's surroundings. The presence of rats has practically always been found.

It is quite possible that many more cases do occur, but remain undiagnosed as the symptoms are similar to those of influenza and the rash does not always show up clearly.

It is intended to study the circumstances surrounding the occurrence of this disease closely in the future.

Influenza.—There were 52 deaths from influenza; 2 deaths from *Cerebro-Spinal Meningitis*; and 2 from *Encephalitis Lethargica.*

Diarrhoea and *Enteritis* caused the deaths of 48 children under 2 years of age; and of 44 persons 2 years and over.

Maternal Mortality.—Forty deaths occurred from *puerperal septicaemia* (including 17 abortions with septic conditions), and 92 deaths from other puerperal diseases, including 29 from illegal operations. Maternal mortality rate is 5·41 per 1,000 births.

Infantile Mortality.—There were 741 deaths of infants under 1 year of age, while births numbered 17,759, representing an infant mortality rate of 41·73 per 1,000 live births. Of the deaths in the first year of life, 398 occurred in the first week of life and 507 in the first month, equivalent to 53·7 and 68·4 per cent. respectively.

Mosquitoes.—During the warm months of the year the presence of mosquitoes has been observed in a number of municipalities. The main type is *Culex fatigans.*

This mosquito breeds in water which has been polluted with sewage, sullage wastes, etc.

Much can be done by councils in their respective areas by the draining of swamps, construction of concrete gutters in place of spade-cut channels, canalization of streams and clearance of weeds, etc., from the sides of ponds, which by the formation of backwaters, permit mosquitoes to breed in safety, and where larvae-eating fish cannot go. Much has already been done in supplying "Gambusiae" to various councils for introduction into ponds formed in old disused brick pits, clay pits, etc., but to be successful the fish must have free access to every part.

These fish, however, should not be introduced into creeks which drain into rivers as it has been observed that they may do much damage to the breeding of trout.

Regular oiling of swamps is, of course, another method at the disposal of councils.

It is to be hoped that councils, during the winter months, will actively engage in the promotion of works for the eradication of breeding places of mosquitoes, and thereby contribute largely to the amenities not only of their own area, but to those areas many miles away.

Drainage in Unsewered Areas.—In certain parts of the metropolitan area considerable difficulty arises in the satisfactory disposal of sullage water from the street channels, many of which are not concreted, but simply spade-cut earth channels in which latter position the sullage water tends to remain and stagnate.

The same conditions occur on a larger scale in certain creeks, such as Haslem's Creek and the Duck Creek. These creeks receive much of the waste water, including septic tank effluents.

It can readily be understood that in these stagnating channels and creeks, a serious health hazard exists, and there is no doubt that several of the children in the recent typhoid epidemic in Auburn received their infection from contact with polluted waste water. Also, myriads of *culex fatigans* are breeding at the very doors of the people, and at times the stench is overpowering.

Efforts are being made to have the gutters concreted, and the creeks canalized. The installation of sewerage, which is in progress at present, will naturally overcome the major portion of the trouble.

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Work Performed by Officers of Pure Food Branch in the Metropolitan Area during 1936.

Inspections of food premises (butchers, smallgoods, poulterers, bakeries, restaurants, confectioners, aerated water factories, etc.)	7,249
Number of milk samples taken	13,270
Number of meat and other food samples	8,351

Legal Proceedings.

Prosecutions (adulterated food and other breaches of the Pure Food Act and Regulations)	319

Fines and costs, £727 16s.

Officers of the Department of Public Health conducted the following Inspections in the Metropolitan Area during 1936.

Inspection of buildings	144
Closing order certificates	25
Inspection of—	
State school	1
Public halls	2
Noxious trade premises	4
Barbers' shops	4
Recreation grounds	2
Road camps	1
Unemployed camp	1
Nightsoil depots	43
Garbage depots	61
Approvals—	
Nightsoil depots	2
Garbage depots	1
Methods nightsoil disposal	1
Scavenging districts	2
Description of boundaries	2
Investigation of—	
Nightsoil disposal	2
Garbage disposal	4
Septic Tanks—	
Inspections	5
Plans	7
Sites	8
Inspection of—	
Private water supplies	19
Incinerators	34
Proposed sites for incinerators	2
Inspection of swimming pools	8
Samples taken, Water—	
Chemical	6
Microbiological	6
Investigation of—	
Infectious disease	22
Pollution of water courses	3
Samples of faeces—Urine—Typhoid	24
Investigation of—	
Rats, vermin, etc.	50
Nuisances	215
Re drainage	214
Smoke, dust, fumes, etc.	63
Mosquitoes	24
Giving evidence at Police Court on behalf of L.A's.	4
Plans and specifications of proposed septic tanks perused and reported on	246
Proposed sites inspected	246
Septic tanks and effluent disposal areas inspected	20
Chemical closets inspected	4

Hunter River Combined Sanitary District.

REPORT OF THE MEDICAL OFFICER OF HEALTH FOR THE YEAR ENDED 31st DECEMBER, 1936.

Staff.—Dr. J. R. Shannon, Medical Officer of Health; 1 Health Inspector, 1 Supervisory Nurse and 1 Temporary Office Assistant.

Staff Changes.—Dr. T. L. Dunn, Medical Officer of Health, resigned from the service on the 7th December, 1936, to take up the position of City Health Officer, City of Sydney. For a period of three weeks Dr. B. R. Overend acted as Medical Officer of Health, and on the 21st December, 1936, Dr. J. R. Shannon was appointed Medical Officer of Health, Newcastle.

Mr. J. C. Meddows, Senior Health Inspector, resigned from the service in January, 1936, to accept the position of Chief Health Inspector, Newcastle City Council. Mr. A. J. Guy transferred from Head Office to take up duties as Senior Inspector, Newcastle.

Miss B. M. Durie, clerk, was transferred to Analyst Branch, Head Office, and Miss M. J. Rees was appointed temporary office assistant on 13th July, 1936.

The District comprises 17 municipalities and 5 shires, together with the Harbour of Port Hunter.

Population.—The population of the district at the census of 30th June 1933 was 209 465. The estimated population at the 31st December 1936 was 218,290 and the estimated mean population for 1936 was 217,200.

Births.—3,764 live births were registered in the district, equivalent to a rate of 17·33 per 1,000 of population. Of these, 1,964 were males and 1,800 females.

Ex nuptial births numbered 152, equivalent to a rate of 0·70 per 1,000 of population per annum.

Deaths.—Numbered 1,893, equivalent to a rate of 8·72 per 1,000 population.

Infantile Mortality.—Deaths under one year of age numbered 160, equal to a rate of 42·51 per 1,000 births.

Infectious Diseases.

Details of cases of notifiable infectious diseases are given below :—

Diphtheria.—784 cases were notified in 1936, compared with 355 cases in 1935, and 513, the annual average for the preceding five years.

These figures show an increase of nearly 50 per cent. over the previous year's figures.

Diphtheria Immunization.—1,967 children were immunized during 1936. Details for the districts are as follows :—

Waratah	469
Wickham	339
Hamilton	493
Wallsend	326
Morpeth	62
N. Lambton	110
Singleton	168
Total	1,967

Scarlet Fever.—115 cases in 1936 compared with 148 cases during 1935, and an annual average of 318 for the preceding five years.

Typhoid Fever.—8 cases, compared with 16 cases in 1935, and an annual average of 18 for the preceding five years.

Following a thorough investigation in 1935 in an endemic area, considerable improvement to the sanitary environment was effected at the direction of this Department.

The nightsoil removal service was found to be in an appalling state, and a notice was served by this Department giving Council twenty-four hours to institute a modern service. The figures above shown indicate the advantages obtained.

Infantile Paralysis.—Only one (1) case was reported in 1936, compared with 21 in 1935.

Encephalitis Lethargica.—Nil.

Cerebro-spinal Meningitis.—1 case.

Puerperal Infection.—There were nine (9) cases reported in 1936, compared with 16 cases in 1935.

Pulmonary Tuberculosis.—75 cases were notified during 1936, compared with 117 cases in 1935.

There were 2,973 attendances at the Newcastle Hospital Anti-Tuberculosis Dispensary during 1936. Patients attending numbered 650, of whom 344 were new cases.

Artificial Pneumothorax treatment was effected on 20 patients. Homes visited numbered 66. In all 256 home visits were made by the Supervisory Nurse.

Venereal Diseases.—In tracing (female) defaulters, 15 visits were made.

Fifteen persons (15) (male) were notified as having defaulted from treatment. Investigations were made in each case, it invariably being found that the person concerned had changed his place of abode, rendering location most difficult.

Private Hospitals.—Number registered in Hunter River Combined Sanitary District in 1936 totalled 48, housing a total of 293 beds. During 1936 four (4) private hospitals were closed and three (3) new licenses were issued.

Inspections of Private Hospitals during the year totalled 110.

Registered Midwifery Nurses.—Number registered in 1936 totalled 186. The Supervisory Nurse made a total of 220 visits of inspection.

General Inspections and Investigations carried out by the Sanitary Inspector comprised :—

Garbage depots	18
Proposed garbage depots	1
Sanitary depots	49
Slaughtering yards	37
Noxious trades	109
Proposed noxious trades	1
Complaints	40
Septic tank plans	11
Septic tank sites	11
Septic tanks	29
Dental investigations	1
Insanitary buildings	16
Food premises	176
Food packages seized and destroyed	2,546
Mosquito breeding places	8
Water samples—chemical, 2; Microbiological, 3	5
Soil samples	2
Barbers' shops	13
Unemployed camps	23
Investigation into slaughtering fees—Kearsley and Tarro Shires	...
Miscellaneous Inspections	63
Miscellaneous interviews	43

Unhealthy Building Land.—Further progress was made throughout 1936 in survey and proclamation of low-lying land in this district. The steps taken in this direction, although at present appearing a hardship to owners of the land concerned, will ultimately result in greatly improved housing conditions. During the past few years development of this land has been held in check due to financial stress but during 1936, greater building activity was evident.

Judging by present rate of development, low-lying land will shortly be in demand resulting in increased surveillance by this Department, and ultimately in conversion of low areas into suitable sites.

Improved financial conditions and strict adherence to the proclamation over a large area of swampy land in close proximity to the city of Newcastle, are resulting in conversion of an almost undesirable quarter into an ideal suburb.

During 1936, 6 houses on this area were raised, in some cases a height of 4 feet, the land being raised 2 ft. 6 in. Damage caused during raising of the building appeared negligable but owners, realising the improvement to their property, effected additional improvements.

Six vacant allotments were raised and new buildings erected in this area.

Health Week.—At the instigation of the New South Wales Health Week Council, a local committee was formed embracing representatives from all sections of the community. Various sub-committees were formed and a most successful campaign launched. Owing to the success of the campaign, it was decided to make " Health Week " an annual event to be held towards the end of February. The committees were called together in September, 1936, and a comprehensive programme prepared.

This Department, representing the State Health Service, took a prominent part in the campaign. Local governing bodies in Newcastle district were requested to co-operate and with a few exceptions gave valuable assistance.

Meat Inspection.—Two shires within the district have continued supervision of cattle slaughtering to assure a wholesome meat supply to the thickly populated areas in and near their centres. Five certificated meat inspectors are employed, their duty being to examine each animal slaughtered. Although these officers are required to travel from place to place and work at irregular hours, little difficulty has been experienced in conducting efficient meat inspection.

Slaughtering fees are based on the cost of inspection, allowing a slight margin in excess. To assure that the fees charged are equitable, an investigation is made by this Department from time to time.

The fees charged, based on average weight carcases amount to a fraction of a penny per pound weight, making very little difference in price of meat and assuring a wholesome supply.

Cattle slaughtering figures and condemnations for year, 1936, in the area supervised by this Department are given as under :—

	Tarro Shire.			Kearsley Shire.		
	Slaughtered.	Condemned.	Partially Condemned.	Slaughtered.	Condemned.	Partially Condemned.
Cattle	4,476	60	...	11,081	54	...
Calves	364	...	...	2,439	2	...
Sheep	12,938	8	...	30,115	5	...
Pigs	1,774	32	...	6,167	142	...
Livers	...	...	923	...	...	14,761
Head and Tongues	...	...	723	...	...	983
Kidneys	...	...	611	...	...	1,384
Hearts	...	...	46	...	...	169
Other parts	...	...	3,785	...	...	156
Trimmings	...	...	993 lb.	...	...	805 lb.

Slaughtering Premises.—During 1936 this Department required a number of improvements, and in one instance, rebuilding, to be carried out at private slaughtering premises with a view to assuring more hygienic preparation of food for human consumption.

In several instances warnings were issued to maintain the premises clean, but at the majority of premises rigid adherence to cleanliness existed.

Medical Examinations of pilots, entrants to the Public Service, applicants for pensions, surgical appliances and admissions to State hospitals and homes, etc., numbered 191.

Broken Hill and District.

REPORT OF THE MEDICAL OFFICER OF HEALTH, W. E. GEORGE, M.B., Ch.M., FOR THE YEAR ENDED 31st DECEMBER, 1936.

The population of Broken Hill Municipal District at 31st December, 1936, was 28,374. The deaths numbered 308 (males, 171; females, 137). There were 643 births for the twelve months, comprising 342 males and 301 females.

Infectious Diseases.—The monthly incidence of notifiable infectious diseases was as follows :—

	Typhoid and Paratyphoid.	Scarlet Fever.	Diphtheria.
January	...	2	...
February	1	...	...
March	2	...	...
April	...	...	2
May	4	...	...
June	1	...	...
July	...	1	1
August	...	2	...
September	...	...	...
October	...	1	...
November	...	1	...
December	...	6	7
Totals	8	13	10

Notifications of other infectious diseases were nil.

The incidence of notifiable infectious diseases at Broken Hill during the past five years is shown in the following table :—

	1932.	1933.	1934.	1935.	1936.
Typhoid and Paratyphoid Fever	20	8	10	11	8
Scarlet Fever	16	31	36	17	13
Diphtheria	32	27	42	9	10
Infantile Paralysis	6	...	...	...	...

The particularly low incidence of all notifiable infectious disease, which has been noted in previous reports, continues.

The usual sporadic cases of typhoid of an unsewered town have occurred, the small number of cases of scarlet fever and diphtheria is noteworthy.

No cases of other notifiable diseases were recorded.

The health of the city and district continues highly satisfactory. There were no epidemics of non-notifiable disease.

The prosperity of the city continues. The re-opened mines referred to in my last report have continued to work, and employment has increased on all mines. With the high prices obtained for lead, a bonus has been added throughout the year to all wages paid on the mines, and this, no doubt, has contributed to the general health and prosperity of the community.

The State Laboratory has continued to carry out very useful service. The total number of examinations at the Laboratory for the year was 3,793, comprising 527 bio-chemical tests, 2,460 bacteriological, 694 haemotological and 112 pathological (tissue) investigations. In addition, 146 serological specimens were sent to Sydney for examination. All necessary culture media, swabs, etc., were prepared at the laboratory.

WM. E. GEORGE,
Medical Officer of Health.

SECTION III.

Report upon the State Hospitals under the Control of the Director-General of Public Health.

1.—THE PRINCE HENRY HOSPITAL, SYDNEY: REPORT FOR THE PERIOD 1ST JANUARY TO 31ST JULY, 1936.

The Medical Superintendent to The Director-General of Public Health.

Sir,

I have the honour to submit the following Report on the working of the Prince Henry Hospital during the period 1st January to 31st July, 1936.

The Staff on 31st July, 1936, was as follows :—

THE HONORARY MEDICAL STAFF.

Honorary Consulting Physicians.

Lambie, Chas. George, M.C., M.D., F.R.C.P. (Edin.), F.R.S.E.
Millard, Reginald Jeffrey, C.M.G., C.B.E., M.B., Ch.M. (Syd.), D.P.H. (Camb.).

Honorary Consulting Surgeons.

Dew, Harold Robert, M.B., B.S. (Melb.), F.R.C.S. (Eng.), F.R.A.C.S., F.A.C.S.
Maguire, Frederick Arthur, M.B., Ch.M., M.D. (Syd.), F.R.C.S. (Eng.), F.R.A.C.S., Honorary Consultant Surgeon to Radium Clinic.
Susman, Maurice Philip, M.B., Ch.M. (Syd.), F.R.C.S. (Eng.), Honorary Consulting Thoracic Surgeon to P.H. Aux.

Honorary Physicians.

Blackburn, Charles Bickerton, O.B.E., B.A., M.D., Ch.M.
Bullmore, Herbert Henry, M.B., Ch.B. (Edin.), M.R.C.P. (Edin.).
Jeremy, Richard, M.B., Ch.M. (Syd.), M.R.C.P. (Lond.).
Molesworth, Edmund Harold, M.D., Ch.M., (Syd.), Honorary Dermatologist.
Rosebery, Sidney, M.D., M.R.C.P. (Edin.).
Wilson, Harold, M.D., Ch.M., M.R.C.P. (Lond.).

Honorary Surgeons.

Bettington, Reginald Henshall, M.B., M.R.C.S., L.R.C.P., Hon. Asst. Ear, Nose and Throat Surgeon.
Bullock, Howard, B.Sc. (Oxon.), M.B., Ch.M. (Syd.), L.R.C.P. (Lond.), F.R.C.S. (Eng.).
Darling, Harry C. Rutherford, M.D., M.S. (Lond.), F.R.C.S. (Eng.), F.R.S.P.S. (Glasg.).
Davies, Reginald Laidlaw, O.B.E. (M.), M.B., Ch.M. (Syd.), F.R.C.S. (Edin.), F.R.A.C.S., Honorary Gynaecological Surgeon.
Furber, Thomas Maynard, M.B., Ch.M., F.R.A.C.S.
Halliday, John Charles White, M.B., Ch.M. (Syd.), D.P.H. (Camb.), F.R.C.S. (Edin.), F.R.A.C.S., Hon. Ophthalmic Surgeon.
Johnston, Herbert Huff M.B., Ch.M., (Syd.), Honorary Ear, Nose and Throat Surgeon.
Loewenthal, Louis Samuel, M.B., Ch.M., Acting Director of Radium Clinic.
Moran, Herbert Michael, M.B., Ch.M. (Syd.), F.R.C.S. (Edin.), F.R.A.C.S., Hon. Radium Therapeutist.
Parkinson, Philip, M.B., Hon. Radio Therapeutist.
Silverton, Robert Joseph, M.B., Ch.M. (Syd.), F.R.C.S. (Edin.), F.R.A.C.S., Hon. Urologist.
Storey, John Colvin, O.B.E., M.B., Ch.M. (Syd.), F.R.C.S. (Eng.), F.R.A.C.S.
Vickers, Wilfred, D.S.O., V.D., M.B., Ch.M. (Syd.), F.R.A.C.S., Hon. Orthopoedic Surgeon.
Wade, Robert Blakeway, M.D., Ch.M., F.R.A.C.S.
Walker-Smith, Angus Buchanan, M.B., Ch.M., F.R.C.S., Hon. Assistant Urologist.
Walters, Cecil J. M., M.B., Ch.M. (Syd.), F.R.A.C.S., Hon. Surgeon and Surgical Tutor.

Honorary Radiologists.

Dight, Wilfred Billingsley, M.B., Ch.M.
Tillett, Paul, M.B., Ch.M. (Syd.).

Honorary Anaesthetist.

Jones, Philip Sydney, Ch.M., M.B.

Honorary Physicist.

Love, William Henry, D.Sc. (Syd.).

Honorary Consulting Dentist.

Wallace, Ernest Stanley, B.D.Sc. (Syd.), D.D.Sc. (Melb.), Consulting Dental Surgeon.

Honorary Dentist.

Hughes, Clarence Henry, B.D.Sc., D.D.Sc., Honorary Dentist.

Resident Staff.

Medical Superintendent.—Henri V. D. Baret, B.A., M.B.
Deputy Medical Superintendent.—Francis Hales Wilson, B.Sc., M.B.
Senior Medical Officers.—Norman J. Symington, M.B., Ch.M.; Reuben R. Bye, M.B., B.S.; Max R. Morey, M.B., B.S.
Pathologist.—Ernest B. Jones, M.B., Ch.M.
Junior Medical Officers.—8.

Manager.—William J. Gordon, M.C., J.P.
Matron.—Miss C. M. Dickson.
Assistant Sub-Matron.—Miss J. McArthur.
First Clerk.—Lancelot R. McKell.
Sub-Matron.—Miss M. A. R. Hall.
Dispenser.—Miss K. M. Legg.

I.—The following table is a comparative general statement for the year 1935, and the period 1st January to 31st July, 1936.

	1935.	To 31st July, 1936.
Remaining in Hospital on 31st December ...	656	755
Admitted during the year	8,921	5,565
Total cases under treatment	9,530	6,221
Discharges, including deaths	8,874	5,466
Deaths	587	288
Death-rate per cent. of total discharges	6·6	5·26
Average daily number of occupied beds	701·9	729·1
Average stay of patients (in days)	26·9	27·7

For the period January-July, 1936, the average daily number of occupied beds was 729·1, as against 701·9 in 1935. The average stay of patients was 27·7 days.

II. *Infectious Diseases.*—The following table summarises the work of the hospital in regard to infectious diseases. In this table the " cases " are cases treated until discharge or death and the fatality is reckoned on the total cases treated. Cases remaining in hospital on 31st July, 1936, are not included in these figures :—

	1935.			To 31st July, 1936.		
	Cases.	Deaths.	Fatality.	Cases.	Deaths.	Fatality.
Typhoid Fever	7	1	14·3	7	1	14·3
Measles	370	18	4·9	47	1	2·13
Scarlet Fever	879	7	·8	616	5	·81
Whooping-cough	...	...	...	1	...	...
Diphtheria	1,218	37	3	1,268	25	1·97
Influenza.....	124	4	3·2	22	1	4·5
Erysipelas	90	3	3·3	40	1	2·5
Other Epidemic Diseases	47	...	...	36	...	...

Typhoid Fever.—The number of cases treated was seven (7); the fatality was one (1).

Scarlet Fever.—1,066 cases were notified in the whole Metropolitan area during the seven months—January to July, 1936. The cases treated at the Prince Henry Hospital numbered 616. There were five (5) deaths.

Diphtheria.—In the Metropolis the number of cases notified during the period under review was 2,390. The number of cases treated at the Prince Henry Hospital was 1,268. The percentage of notified cases which came to this hospital was 53. Of the 25 fatal cases 18 died within seven days of admission. No intubations or tracheotomies were performed.

Altogether 1,961 cases of typhoid fever, measles, scarlet fever, diphtheria and influenza were treated.

Summary of Abortion Cases Treated at the Prince Henry Hospital.

Abortion.—During the seven (7) months—1st January to 31st July, 1936—343 patients were treated for abortion.

The following table shows the ratio of abortion cases to all females treated in successive years from 1922 to 1935, and for the seven months ended 31st July, 1936 :—

Year.	Total Females Discharged or Died.	Number of abortion cases Discharged or Died.	Percentage of abortion cases to total Females.	How Discharged.				Fatality per cent of cases of abortion Discharged or Died.	No. of cases of abortion remaining at Hospital end of year.	Total cases treated including those in Hospital at end of year.
				Cured.	Relieved.	Unrelieved.	Died.			
1922	3,387	345	10·18	329	11	1	4	1·16	9	354
1923	4,247	373	8·78	346	5	2	20	5·36	8	381
1924	4,343	436	10·03	420	9	3	4	·91	12	448
1925	4,556	470	10·31	455	8	...	7	1·49	27	497
1926	5,586	620	11·09	590	24	2	4	·64	10	630
1927	5,770	581	10·07	554	12	2	13	2·24	15	596
1928	5,267	572	10·86	543	15	4	10	1·75	...	572
1929	5,575	755	13·54	717	24	4	10	1·32	9	764
1930	6,090	887	14·56	824	43	4	16	1·8	18	905
1931	6,176	883	14·29	854	21	...	8	·91	21	904
1932	6,081	799	13·1	760	18	3	18	2·3	24	823
1933	5,540	699	12·6	658	15	2	14	2·0	15	714
1934	5,304	927	17·14	888	14	4	26	2·8	19	946
1935	5,041	718	14·24	689	17	1	11	1·57	14	732
1936 to 31/7/36	3,172	334	10·53	329	2	...	3	·9	9	343

Expenditure.—Table IX gives a detailed statement of the working expenses of the hospital for the period 1st January to 31st July, 1936, from which it will be seen that the average cost per occupied bed for the period was £105 17s. 10d. This cost is equal to £3 9s. 7d. a week.

X-ray Department.

Examinations Carried Out in X-ray Department from 1st January, 1936, to 31st July, 1936.

Renal tracts, including intravenous, retrograde, pneumo-pyelography, etc., 529; skulls, including sinuses, mastoids, encephalography, etc., 448; cholecystography, 328; chests, 898; nurses' chests, 124; fractures, 360; bone diseases, 737; foreign bodies, 22; barium meals, 250; barium enemas, 98; dental, 69; alimentary tracts, 10; fluoroscopic screenings, 283; clinical photography, 2.

Deep X-ray Therapy Department.

During the period 1st January to 31st July, 1936, 53 separate cases were treated. Of these, 20 were males and 33 were females. These patients received an aggregate of 954 treatments.

Radium Clinic.

The following cases were treated during the seven months—January to July, 1936 :—Skin cancer, 23; cancer of cervix uteri, 6; cancer of lymph glands, 1; for menorrhagia, 1.

Work Performed by Hospital Staff.

Repair and maintenance of laundry machinery, hot water and steam services.

Repairs and maintenance of electrical services and equipment.

Repair and maintenance of sterilizers and other equipment, including surgical instruments, etc.

Repair and renovation of hospital furniture and appliances.

Minor alterations and additions to buildings, etc.

Care of grounds, gardens, fencing, etc.

Glazing, painting of buildings, vehicles, etc.

H. V. D. Baret,
Medical Superintendent.

Table I.—General Statement of the working of the Hospital from 1st January to 31st July, 1936.

	No. of Beds, 31/7/36.
Number of beds available in the General Division on 31st July, 1936	436
Number of beds available in the Infectious Division	262
,, ,, Nurses' Sick Room	5
Prince Henry Hospital Auxiliary, Randwick	120
Total accommodation	823

	Males.	Females.	Total.
Number of inmates remaining in hospital on 31st December, 1935..	377	279	656
,, admitted from 1/1/36 to 31/7/36	2,325	3,240	5,565
Total treated	2,702	3,519	6,221
Discharged—Cured	1,499	2,498	3,997
,, Relieved	570	426	996
,, Unrelieved	71	88	159
No Disease	10	16	26
Died	144	144	288
Total number discharged, or who died	2,294	3,172	5,466
Remaining in hospital on 31st July, 1936	408	347	755

Average daily number resident	729·1
Average residence of discharged patients in days	27·7
Rate of mortality on total number who were discharged or who died	5·26
Total cost of maintenance and treatment of indoor patients	£77,206 19s. 3d.
Average cost of patients for period	£105 17s. 10d.

	Males.	Females.	Total Visits.
Out-patients— Total number of visits for period 1/1/36 to 31/7/36	5,324	5,768	11,092

*50543—P

Hospital Staff on 31st July, 1936.

Medical and Administrative.	Number.	Nursing.	Number.	General.	Number.
Medical Superintendent	1	Sub-Matron	1	Gardeners	2
Deputy Medical Superintendent	1	Asst. Sub-Matron	1	Motor Drivers	2
Pathologist	1	Sisters, Senior	10	Overseer	1
Senior Medical Officers	3	„ Junior	9	Engineer	1
Junior „ „	8	Nurses, Staff	19	Painters	2
Manager	1	„ Trained	28	Plumber	1
Matron	1	„ Pupil	209	Carpenters	3
Dispensers	4	Ward Attendants	26	Electrician	2
„ Assistants	2	Housekeeper	1	Firemen	3
Clerks	11	Masseuse	2	Fitter	1
Laboratory Assistants	2			Outdoor Attendants, etc.	23
X-Ray Technician	1	Total	306	Telephone „	4
„ Assistant	1			Cooks, Male	2
Storekeeper	1			„ Female	5
				Kitchenmen	3
Total	38			Laundry, Male	6
				„ Female	13
				Chaplains	2
				Seamstress	4
				Female Servants	81
				Total	161
				Grand Total Staff...	505

TABLE II.—Return showing the number of Wards, together with the cubic space and number of beds in each Ward, in the General and Infectious Divisions of the Prince Henry Hospital as on 31st July, 1936.

Ward.	Cubic Space.	No. of Beds.	Cubic space per Bed in Ward.	Ward.	Cubic Space.	No. of Beds.	Cubic Space per Bed in Ward.
1 and 2	77,788	67	1,161	16	11,520	16	720
5 and gallery	31,368	24	1,307	18 and verandah	53,062	50	1,061
6	10,800	8	1,350	19 and verandah	53,062	51	1,040
7	10,800	8	1,350	20 and verandah	53,062	50	1,061
8 and gallery	32,268	26	1,241	21 and verandah	53,062	50	1,067
9	12,000	8	1,500	23 and verandah	53,062	50	1,061
10 and N. Sick Room	16,356	18	909	24	19,023	25	761
11 (New Ward)	57,840	50	1,157	25	19,023	25	761
12	23,880	29	823	26	19,023	25	761
13	28,236	39	724	27	19,023	25	761
14	43,520	28	1,554				
15	28,296	31	912	Total	726,074	703	1,032

Old Ward 11 and Ward 17 remained unoccupied throughout the period.

The Prince Henry Hospital Auxiliary, Randwick.

Ward.	Cubic Space.	No. of Beds.	Cubic space per Bed
22*	23,415	24	975
23	23,415	24	975
24	23,415	24	975
26	23,415	24	975
Total	93,660	96	975

These figures do not include 6 beds on the verandah of each ward.

* Ward 22 was unoccupied during the months of May, June and July, 1936.

TABLE IX.—STATEMENT OF WORKING EXPENSES OF THE PRINCE HENRY HOSPITAL FOR THE PERIOD 1st JANUARY, 1936, TO 31st JULY, 1936.

	1935.	Average.	From 1 January, 1936, to 31 July, 1936.	Average.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
A. Salaries and Wages—				
1. Administrative	1,831 7 7		1,177 16 6	
2. Medical	3,807 2 6		3,160 7 3	
3. Clerical	2,372 13 11		1,840 10 6	
4. Dispensary	1,160 1 2		787 3 7	
5. Nursing	20,099 11 8		14,572 13 0	
6. Laundry	2,996 6 6		1,221 2 2	
7. Tradesmen and Mechanics	3,713 18 10		2,193 11 1	
8. Cleaning and General	22,263 8 10		14,964 8 9	
9. Farm and Garden	802 10 3		526 6 6	
10. X-ray	495 3 10		397 5 8	
	59,542 5 1	84 16 7	40,841 5 0	56 0 4
B. Provisions—				
1. Meat	3,315 13 5		2,437 11 3	
2. Milk	3,537 17 10		2,165 9 11	
3. Butter	1,887 0 8		1,116 10 3	
4. Bread and Flour	1,334 18 3		752 15 3	
5. Eggs	1,426 14 3		1,120 1 4	
6. Fish	425 18 0		258 12 3	
7. Poultry	1,303 5 1		667 19 2	
8. Groceries	3,610 15 6		2,794 4 4	
9. Vegetables and Fruit	1,746 14 11		888 14 10	
10. Malt Liquors	5 5 0		8 11 10	
11. Ice	96 3 0		74 19 6	
12. Cream	288 12 10		160 15 10	
	18,978 18 9	27 0 9	12,446 5 9	17 1 5
C. Drugs and Surgical Appliances—				
1. Drugs, etc.	9,005 7 6		6,435 0 10	
2. Dressings and Bandages	402 11 7		115 2 7	
3. Surgical Appliances	309 14 2		745 2 8	
4. Surgical Instruments	1,035 10 0		652 5 1	
5. Stimulants	26 10 1		89 9 10	
	10,779 13 4	15 7 1	8,037 1 0	11 0 5
D. Fuel, Light and Power—				
1. Coal, Coke and Fuel Oil	3,544 5 9		2,695 9 4	
2. Electricity	1,370 7 8		1,208 17 8	
3. Electrical Fittings	183 4 9		66 6 5	
	5,097 18 2	7 5 3	3,970 13 5	5 8 10
E. Domestic—				
1. Bedding and Bed Linen	1,837 10 5		831 9 9	
2. Clothing	1,048 5 0		489 11 11	
3. Drapery	296 13 11		262 18 1	
4. Uniform	258 2 4		101 9 1	
5. Renewals of Furniture	385 19 1		244 14 7	
6. Ironmongery and Cutlery	71 10 0		41 9 6	
7. Brushware, Earthenware, etc.	271 19 1		156 7 0	
8. Laundry Materials	217 6 4		297 5 1	
	4,387 6 2	6 5 0	2,425 5 0	3 6 6
F. Printing and Stationery—				
1. Printing and Stationery	566 16 7		318 1 1	
2. Postage	159 13 0		83 2 0	
	726 9 7	1 0 8	401 3 1	0 11 0
G. Maintenance of Buildings—				
1. Ordinary Repairs and Alterations	1,050 11 7		511 17 11	
2. Roadways and Grounds	11 5 3		28 16 6	
	1,061 16 10	1 10 3	540 14 5	0 14 10
J. Miscellaneous—				
1. Rates and Taxes	631 12 6		541 6 11	
2. Pathological Laboratory	91 2 11		89 19 5	
3. Burials and Coffins	171 0 5		52 5 10	
4. Telephones	391 7 11		2 1 3	
5. Petty Expenses	439 18 3		318 2 1	
6. Unclassified	899 19 7		} 375 13 5	
7. Dental	235 15 11			
	2,858 17 6	4 1 5	1,379 8 11	1 17 10
K. Extraordinary Expenditure—				
1. Surgical Instruments	32 8 0		.....	
2. Surgical Appliances	24 7 6		.....	
3. Motor Vehicles	.....		252 2 5	
4. New Furniture	72 12 8		12 5 6	
5. Deep Ray Therapy	2,799 18 9		.....	
6. Pathological Department	22 17 7		.....	
7. Special Repairs	5 0 0		.....	
	2,957 4 6	4 4 3	264 7 11	0 7 3

TABLE IX.—Statement of Working Expenses of the Prince Henry Hospital.—*continued.*

	1935.	Average.	From 1 January, 1936, to 31 July, 1936.	Average.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
L. Special Departments—				
1. X-ray	1,204 7 11	1 14 3	686 6 6	0 18 10
M. Farm, Garden and Live Stock—				
1. Purchase of Horses	48 0 0		.....	
2. Purchase of Fodder	148 18 6		134 19 1	
3. Miscellaneous	172 11 3		44 9 1	
	369 9 9	0 10 6	179 8 2	0 4 11
N. Auxiliary Hospital—				
1. Salaries and Wages	5,006 5 11		3,172 5 3	
2. Maintenance	5,738 5 10		2,845 11 0	
3. Stores	484 8 2		286 12 10	
	11,228 19 11	16 0 0	6,304 9 1	8 12 11
Total Expenditure	119,193 7 6	169 16 4	77,476 8 3	106 5 3
Deduct value of goods supplied to other institutions	.....		.....	
Add value of goods received from other institutions	7 5 0		.....	
	119,200 12 6		77,476 8 3	
Add value of stock on hand on 31st December, 1935	6,107 19 8		6,202 13 3	
	125,308 12 2		83,679 1 6	
Deduct value of stock on hand on 31st July, 1936	6,202 13 3		6,207 14 4	
	119,105 18 11		77,471 7 2	
Deduct Extraordinary Expenditure	2,957 4 6		264 7 11	
	116,148 14 5		77,206 19 3	
Average cost per occupied bed	.....	165 9 6	.....	105 17 10
Deduct Collections paid to Revenue	21,917 7 5		14,999 5 11	
	94,231 7 0		62,207 13 4	
Nett cost per occupied bed	.....	134 5 0	.....	85 6 5

TABLE X.—Amount expended from the Vote of the Public Works Department not included in the foregoing statistics.

	1935.		1st Jan. to 31st July, 1936.	
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Steam and Hot Water Services—				
Repairs—Steam and Hot Water Service	231 11 5	.....	59 7 6	.....
Repairs and Renewals of Boilers	.....	.....	.....	.....
Hot Water Service	47 11 10	.....	.....	.....
Total	279 3 3	.....	59 7 6	.....
Mechanical and Electrical Maintenance	291 19 2	.....	166 3 1	.....
Total	.....	571 2 5	.....	225 10 7
General—				
Repair and Renovation of Buildings	1,551 4 4	.....	218 5 11	.....
Drainage, Sewerage and Roads	12,647 3 11	.....	.....	.....
Repair and Extension of Water Services	91 7 8	.....	20 14 3	.....
New Buildings and Additions	71,684 12 3	.....	17,071 9 6	.....
Renovation—Randwick Auxiliary Hospital	250 16 5	.....	90 2 0	.....
Miscellaneous	174 4 4	.....	64 10 0	.....
Laundry Plant	304 10 0	.....	4 8 5	.....
X-ray Apparatus, etc.	76 2 6	.....	202 13 0	.....
Electro Cardiograph	373 10 0	.....	.....	.....
Surgical Instruments, etc.	21 0 0	.....	287 3 11	.....
Total	87,174 11 5	87,174 11 5	17,959 7 0	17,959 7 0
Grand Total £	87,745 13 10	87,745 13 10	18,184 17 7	18,184 17 7

Credits were received amounting to £134 2s.

TABLE XI.—SUMMARY TABLE, showing the work of the Prince Henry Hospital and its cost each year, from 1891 to 31st July, 1936.

Year.	No. of Patients admitted.	Average residence of discharged patients in days.	Rate of Mortality on cases treated.	Infectious Diseases included in foregoing columns.																		Average daily number.	Cost per occupied bed.	Wines, spirits, etc., cost per head (included in foregoing columns).
				Typhoid Fever.		Variola.		Measles.		Scarlet Fever.		Whooping Cough.		Diphtheria.		Influenza.		Plague.		Erysipelas.		Other Epidemic Diseases.				
				Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.		£ s. d.	£ s. d.
1891	1,748	40·00	3·23	88	8	...	...	1	...	22	...	25	2	4	...	...	...	...	...	31	...	7	...	193·00	50 2 6	0 5 2¾
1892	1,644	44·06	4·04	61	10	...	...	2	...	39	...	29	2	6	3	...	...	...	...	24	...	16	...	200·03	44 17 11¼	0 7 6¼
1893	2,274	32·08	4·05	83	10	...	...	281	8	195	12	7	...	9	3	...	...	...	...	36	...	7	...	193·05	47 8 0	0 10 1
1894	2,158	27·06	4·03	143	12	...	...	7	1	118	9	28	3	9	3	...	...	...	...	36	3	26	...	176·04	55 7 4¼	1 3 6¾
1895	2,451	24·06	3·07	96	6	...	...	1	...	60	...	25	1	45	1	...	...	...	...	51	...	10	...	176·03	59 1 11	1 1 6¾
1896	2,213	31·03	5·04	236	19	...	...	2	...	61	2	3	...	11	1	...	...	...	...	63	...	1	...	204·06	51 6 1¾	1 4 4
1897	2,307	32·06	5·05	128	11	...	...	...	...	235	3	...	...	25	...	...	...	...	...	100	7	6	...	224·04	50 19 2½	1 9 10
1898	2,694	31·04	5·38	163	18	...	...	319	15	350	7	...	...	27	4	...	...	...	...	70	2	...	...	231·00	64 14 10¾	1 14 3¼
1899	2,359	36·30	4·79	148	13	...	...	10	...	134	2	42	10	25	2	...	...	...	...	54	...	8	...	224·25	73 10 11¾	1 13 10
1900	2,513	30·10	5·20	247	25	...	...	29	...	116	2	2	...	7	2	...	...	...	...	33	2	4	...	214·40	72 18 8¼	1 8 2¾
1901	2,688	31·24	5·75	214	21	...	...	131	1	150	5	15	...	65	4	...	...	...	...	49	5	11	...	255·50	59 4 3½	0 16 1¼
1902	2,672	30·94	6·29	144	5	...	...	73	...	313	20	26	...	64	5	...	...	128	26	109	8	6	...	256·85	66 9 4¾	0 13 10½
1903	3,359	31·72	4·67	166	20	...	...	62	1	585	21	13	3	92	...	...	...	2	...	84	6	16	1	300·76	61 17 11¼	0 5 2¾
1904	3,439	30·94	5·17	178	24	...	...	81	1	371	11	40	4	301	11	...	...	10	4	113	5	44	...	305·16	63 2 11¼	0 7 8½
1905	3,298	31·81	5·20	139	20	...	...	43	1	284	6	1	...	313	10	...	...	16	4	100	6	7	...	289·32	59 12 0¾	0 8 4
1906	2,965	37·03	3·56	84	7	...	...	55	...	503	11	...	...	267	9	...	...	15	4	80	4	3	...	308·67	56 13 1½	0 4 0¾
1907	3,051	37·16	5·93	101	12	...	...	157	5	336	5	93	20	389	23	...	...	41	11	58	...	...	...	307·41	58 17 8¼	0 4 5¼
1908	3,147	32·89	5·44	114	13	...	...	17	1	420	10	6	1	360	11	...	...	7	2	62	7	...	...	306·83	61 11 5	0 4 0¾
1909	2,971	31·13	5·53	96	8	...	...	55	...	339	6	4	...	500	12	...	...	22	7	72	3	...	...	295·33	63 5 4½	0 4 1¾
1910	3,538	30·52	5·39	85	7	...	...	189	12	150	6	74	15	909	18	...	...	...	...	40	3	41	...	312·66	62 2 0¾	0 2 5¾
1911	3,474	29·19	5·32	66	8	...	...	70	...	134	...	67	12	974	24	...	...	...	...	48	4	...	...	322·62	64 0 1¼	0 4 0½
1912	4,170	29·54	5·76	67	8	...	...	475	46	108	4	29	5	1284	36	...	...	...	...	73	8	5	...	335·45	77 15 1½	0 4 1¾
1913	3,702	31·83	5·13	77	10	...	...	93	...	287	7	64	14	994	28	...	...	...	...	48	5	22	...	335·51	87 6 6¼	0 3 3¾
1914	4,032	32·35	3·81	73	12	4	...	82	1	628	7	36	4	977	10	...	...	...	...	34	1	20	...	373·11	74 7 5	0 1 0¾
1915	4,806	30·09	4·12	123	10	6	...	357	2	1279	19	4	...	92	35	...	...	...	...	42	8	12	3	440·00	69 5 7	0 2 3¼
1916	4,618	32·29	3·07	59	8	14	...	206	1	835	22	53	9	1101	32	...	...	...	...	55	1	244	...	447·00	77 4 11	0 4 1¼
1917	4,320	36·49	3·73	16	2	4	...	147	6	498	4	21	4	1328	11	...	...	...	...	79	7	207	...	433·12	94 10 9	0 4 4
1918	4,556	39·60	4·20	31	6	1	...	323	13	314	9	63	8	1251	13	...	...	...	...	92	10	38	...	513·41	98 12 2	0 4 8
1919	5,556	20·67	8·13	25	1	1	...	62	3	213	5	20	1	571	10	2,966	313	...	...	66	2	20	...	385·2	159 0 4	0 8 3
1920	5,945	29·72	7·37	61	5	...	...	581	62	212	1	130	18	904	14	83	...	...	...	86	13	44	...	477·62	159 0 0	0 5 7
1921	6,450	29·3	5·6	49	12	...	...	36	4	174	...	40	4	1360	15	215	16	1	1	102	4	52	...	522·3	156 17 8	0 7 7
1922	6,894	27·54	5·6	33	15	...	...	163	5	229	3	37	2	905	11	118	1	29	6	109	7	514	3	520·16	149 12 4	0 5 8
1923	8,289	34·38	6·37	48	5	...	...	642	35	607	3	32	5	855	13	170	3	...	...	195	12	258	...	563·47	141 10 2	0 13 2
1924	8,171	24·35	5 31	51	4	...	...	85	...	1024	9	39	7	1107	16	158	1	...	...	111	4	79	...	575·29	153 1 1	0 13 6
1925	8,458	23·61	6·41	50	4	...	...	252	11	842	12	89	11	787	3	94	...	...	...	98	4	43	3	578·06	143 9 2	0 11 3
1926	10,175	23·74	5·9	60	4	...	...	701	35	1668	38	46	5	1018	13	251	5	...	...	76	5	62	...	668·09	140 18 7	0 9 10
1927	10,163	27·8	5·6	33	4	...	...	76	1	2183	53	34	5	1997	15	141	1	...	...	109	10	59	2	709·96	151 10 1	0 9 1
1928	10,102	24·5	6·5	15	2	...	...	510	62	1714	44	5	...	1149	18	150	4	...	...	130	5	23	...	737·4	154 0 0	0 7 8
1929	10,454	24·1	6·8	53	3	...	...	199	18	1572	32	79	11	1111	29	208	1	...	...	119	12	100	2	740·00	172 11 10	0 5 3¼
1930	11,001	25·2	6·9	27	3	...	...	566	58	1516	26	30	2	1180	15	62	...	...	...	132	10	55	4	758·00	162 6 10½	0 9 0½
1931	11,069	23·8	6·7	25	2	...	...	93	9	1636	12	62	5	1033	11	155	4	...	...	127	13	35	4	773·00	154 8 6¾	0 9 9
1932	10,467	26·9	6·9	23	1	...	...	86	3	1560	17	1	...	1177	20	82	7	...	...	114	3	51	...	773·00	138 4 5	0 13 2
1933	9,632	26·0	7·01	13	2	...	...	267	14	1380	27	2	...	1212	28	99	...	...	...	85	3	24	1	745·00	130 11 10	0 12 7
1934	9,204	25·4	6·8	8	...	...	...	85	7	674	3	148	32	1530	37	93	2	...	...	74	1	22	...	684·00	160 7 1	0 5 7
1935	8,921	26 9	6·6	5	1	...	...	385	18	975	7	6	...	1207	37	124	4	...	...	94	3	45	...	701·9	165 9 6	0 9 11
1936 (to 31/7/36)	5,565	27·7	5·26	7	1	...	...	47	1	596	5	1	...	1240	25	21	1	...	...	34	1	35	...	729·1	105 17 10	0 2 5

2.—LEPER LAZARET.

REPORT ON LEPROSY IN NEW SOUTH WALES FOR THE YEAR ENDED 31ST DECEMBER, 1936.

On 1st January, 1936, eighteen (18) persons remained under detention at the Lazaret.

During 1936 three persons, two males and one female, were reported to the Board under the Public Health Act, 1902, Part III, as being suspected lepers, and after careful inquiry, they were duly certified as suffering from leprosy and were admitted to the Lazaret by warrant of the Board (one of these cases was transferred to Peel Island, Queensland, shortly after his admission).

One case, E.C.H.L. (case No. 187), was discharged, and two cases, A.N. (case No. 188) and J.H.C. (case No. 191), were transferred to the Lazaret at Peel Island, Queensland.

W.L. (case No. 184), a Chinese, was repatriated to China.

One death occurred during 1936, *i.e.*, G.S. (case No. 88).

The total number of persons admitted since 1883, when patients were first received (though the notification of leprosy was first made compulsory and the detention of lepers provided for by law only towards the end of 1900), is 194. Distributed under nationalities, the account stands as follows at 31st December, 1936 :—

	Admitted.	Readmitted.	Discharged.	Repatriated.	Died.	Remaining in at 31 Dec., 1936.
Whites, of European descent—						
New South Wales	53	3	15	.....	32	9
Victoria	3	.. ..	1	.....	2	.....
Queensland	5	.....	3	.....	2	.....
Northern Territory	1	1	2	.....	.....	.....
Western Australia	1	.....	.....	.....	.....	1
New Zealand	1	.....	.....	.....	1	.....
Fiji	2	.....	1	.....	1	.....
England	13	.....	3	.. ...	9	1
Ireland	8	.. ...	2	.....	6	.....
Scotland	1	.....	1	.....	.....	.....
Germany	5	.....	2 (1 absconded.)	1	2	.....
Belgium	1	.....	.....	.....	1	.. ...
U.S. America	1	.....	.....	.....	1	.....
Greece	2	.....	.....	1	1	.. ...
Malta	2	.....	1 absconded.	... ..	1	.....
Sweden	1	.....	.....	.....	1	.....
France	1	.....	.....	.....	1	.. ...
Mauritius	1	.. ...	1	.. ...	.....	.....
Italy	1	.....	.....	1	.. ...	.. ...
Coloured patients—						
New South Wales	3	.. ...	1	.....	1	1
West Indies	1	....	1 (in 1885).	.....	.....	.....
India	4	.. ...	1 absconded.	1	2	.....
China	58	.. ...	2	34	20	2
Straits Settlements	1	.....	.....	.. ...	.....	1
Java	1	.....	.....	.....	1	.....
New Caledonia	1	.....	.....	... ..	1	.....
Pacific Islands	18	.....	.. ...	6	11	1
Egypt	1	.....	.....	1	.....	.....
Zanzibar	1	.....	1 (Hong Kong at own request).	.....	.....	.....
Syria	2	.....	1	1	.....	.....
	194	4	39	46	97	16

Thus the number remaining in the lazaret on 31st December, 1936, was 16 persons; 13 males and 3 females.

Appendix A shows particulars of each case under detention since the year 1912.*

Every opportunity has been offered to members of the medical profession to visit the lazaret for the purpose of seeing such patients as were formerly under their care, or for study of the disease.

The following statements show the expenditure for the year, and the sources from which it has been defrayed:—

STATEMENT showing the Working Expenses of the Lazarets (for men and for women) at Little Bay for the year 1936.

	1936. £	s.	d.
Salaries	1,857	18	1
Provisions	461	17	2
Fruit and vegetables	364	8	3
Uniforms, clothing, &c.	86	12	10
Printing, stationery and postage	7	5	8
Fuel and light	110	8	5
Wines, ales, &c.	73	5	5
Ironmongery, brushware, &c.	107	10	10
Drugs, dressings, &c.	133	11	5
Sundries	195	5	9
	£3,398	3	10

Average number of patients resident, 17·8, being equal to an average of £190 18s. 0d. per inmate per annum in 1936.

STATEMENT showing the total Expenditure of the Lazarets (for men and for women) at Little Bay during the year 1936, and from what sources the amounts were paid.

EXPENDITURE.	1936. £	s.	d.	HOW PAID.	1936. £	s.	d.
To working expenditure, as per statement.	3,398	3	10	From vote—Maintenance of lepers by Department of Public Health	2,871	8	3
				Transfers from the Prince Henry Hospital stock.	526	15	7
Total .... £	3,398	3	10	Total ..... £	3,398	3	10

The needs of the patients have been carefully supplied by experienced attendants and nurses, under direct supervision of the Medical Superintendent and the Matron of the Prince Henry Hospital, and, as in the past, every means have been adopted to alleviate their sufferings and to mitigate the hardships of their detention.

* For particulars of cases under detention from 1883 see Annual Reports 1913-1930.

APPENDIX A.

RETURN showing Particulars of Lepers admitted to Little Bay, New South Wales, since the year 1912.

Name.	Sex.	Native of—	Occupation.	Admission. Age on	Admission. Date of.	Where from.	No. of Case in Clinical Notes.	Died or Discharged.
G.S.	Female	N.S.W.	Domestic	18	9 Feb., 1904	Lismore, N.S.W.	88	Died, 28 July, 1936.
S.C.	Male	China	Cabinet-maker	40	21 May, 1912	Boolaroo, N.S.W.	128	Died, 15 Sept., 1935.
L.J.T.	,,	N.S.W.	School	12	14 Aug., ,,	Lismore	129	Discharged, 21 July, 1916
S.M.	,,	Mallicolo	Labourer	50	27 ,, ,,	Maclean	130	Died, 23 April, 1919.
J.F.	,,	N.S.W.	Van-driver	28	19 Sept., ,,	Glebe	131	Discharged, 1 Jan., 1920 re-admitted, 7 Nov., 1927 died, 18 Mar., 1930.
W.D.	,,	,,	Fisherman	22	24 June, 1913	Ulladulla, South Coast	132	Discharged, 10 Feb., 1921.
J.M.	,,	New Hebrides	Labourer	60	28 Nov., ,,	Tweed River	133	Died, 17 Mar., 1917.
J.C.M.	,,	N.S.W.	Miner	26	28 Jan., 1914	Homeville, W. Maitland	134	Died, 17 June, 1915.
W.B.	,,	England	Dealer	33	4 Mar., ,,	Sydney	135	Died, 14 Aug., 1915.
A.C.P.	,,	N.S.W.	School	15	23 June, ,,	Lismore	136	Discharged, 12 Oct., 1922 re-admitted, 16 Jan., 1925
E.W.	,,	South Sea Is.	Labourer	50	17 Nov., ,,	Cudgen	137	Discharged, 19 Oct., 1932.
H.H.	,,	England	,,	36	19 May, 1915	Hornsby	138	Died, 7 Jan., 1924.
A.D.	Female	New Hebrides	Domestic	19	1 Sept., ,,	St. Kilda, Victoria	139	Died, 18 July, 1923.
C.F.	Male	China	Cabinet-maker	50	18 Dec., ,,	Waterloo, N.S.W.	140	Discharged, 10 Mar., 1917.
L.F.	,,	England	Showman	45	9 Mar., 1916	Campbelltown	141	Discharged, 2 June, 1917.
F.H.	,,	China	Gardener	45	25 May, ,,	Sydney	142	Died, 15 June, 1916.
D.M.	,,	N.S.W.	Publican	46	25 ,, ,,	Armidale	143	Discharged, 19 May, 1917.
W.J.P.	,,	,,	School	12	25 Nov., ,,	Lismore	144	Discharged, 5 Nov., 1924 re-admitted, 1 July, 1927
E.L.P.	,,	,,	,,	11	25 ,, ,,	,,	145	Died, 27 Dec., 1922.
E.M.	,,	Germany	.....	56	3 April, 1917	Liverpool, N.S.W.	146	Repatriated as Prisoner of War, 27 May, 1919.
C.W.	,,	England	.....	80	14 ,, ,,	Sydney	147	Died, 18 Feb., 1923.
C.D.	Female	N.S.W.	Domestic	54	30 Oct., ,,	Casino, N.S.W.	148	Discharged, 12 June, 1920
P.P.	Male	Greece	Cafe-proprietor	33	21 Feb., 1918	Melbourne, Victoria	149	Died, 24 Feb., 1931.
J.C.	,,	Ireland	Miner	84	5 Feb., 1919	.....	150	Died, 19 Nov., 1920.
M.T.	Female	Victoria	Housewife	63	25 ,, ,,	Sydney	150A	Died, 1 May, 1919.
J.P.	Male	Malta	Labourer	29	18 June, ,,	.....	151	Absconded, 14 Sept., 13
J.S.	,,	,,	,,	30	22 Dec., ,,	Kempsey	152	Died, 29 July, 1921.
A.S.	,,	China	Gardener	64	3 Aug., 1920	Kandos, N.S.W.	153	Died, 2 Aug., 1923.
C.T.P.	,,	,,	Labourer	30	19 Oct., ,,	Nauru Is., S. Pacific	154	Discharged, 25 April, 1921
E.T.D.	,,	N.S.W.	Teamster	32	10 Nov., ,,	Bellingen, N.S.W.	155	Discharged, 1 Dec., 1925. re-admitted, 28 Sept., 1931
T.F.	,,	Ireland	Civil servant	57	20 Dec., ,,	Hobart, Tasmania	156	Discharged, 18 June, 1921.
A.W.	Female	Sweden	Seamstress	62	18 Feb., 1921	Newcastle	157	Died, 24 Feb., 1930.
D.A.	Male	N.S.W.	Teamster	71	26 May, ,,	Newcastle	90	Died, 16 July, 1921.
J.C.	,,	N.S.W.	Fisherman	22	18 Aug., ,,	Tilba Tilba	158	Died 6 Aug., 1934.
A.S.	Female	Queensland	Domestic	20	29 Jan., 1922	Redfern	159	Returned to Peel Island, Queensland, 20 Mar., 1922
Y.M.B.	Male	France	Labourer	67	7 June, 1922	Hunter's Hill	160	Died, 12 Aug., 1922.
E.	,,	Ceylon	Sailor	24	13 Dec., ,,	Not fixed	161	Repatriated, 26 June, 1923
R.B.	,,	N.S.W.	Coach-painter	42	18 June, 1923	Taree, N.S.W.	95	Died, 5 Aug., 1923.
C.E.B.	,,	Northern Terr.	Garage proprietor	35	11 Aug., 1924	Darwin, N.T.	162	Discharged, 16 Sept., 1925 Re-admitted, 7 July, 1933. Discharged, 12 Dec., 1933.
H.L.S.	,,	N.S.W.	Invalid pensioner	37	26 Oct., ,,	Liverpool Asylum	163	
J.B.	,,	Ireland	Bush worker	61	28 Jan., 1925	Liverpool	164	Died, 24 June, 1931.
A.C.	,,	Germany	Importer	45	6 Mar., ,,	Sydney	165	Absconded, 21 Aug., 1925.
K	,,	Hawaii	Musician	...	7 ,, ,,	,,	166	Repatriated, 11 Mar., 1925
A.M.	,,	China	School	12	12 ,, ,,	,,	167	Repatriated, 16 Dec., 1925
A.D.	,,	N.S.W.	,,	7	21 April, ,,	,,	168	Discharged, 1 Dec., 1925.
Wong Toe	,,	China	Gardener	46	22 Nov., ,,	Clarence River	169	
H.P.	,,	N.S.W.	Farmer	39	14 Dec., ,,	Queensland	170	Discharged, 9 Sept., 1926.
G.T.	,,	Scotland	Chemist	56	8 May. 1926	Sydney	.....	Discharged, 21 July, 1926.
E.S G	Female	Queensland	Domestic	33	27 April, 1927	Hunter's Hill	171	Died, 29 Jan., 1930.
A.R.B.	Male	N.S.W.	Farm labourer	41	6 July, ,,	Croydon	172	Died, 26 Nov., 1928.
W.C.	,,	Mauritius	Sugar-worker	47	7 Feb., 1928	Queensland	173	Discharged, 4 July, 1928.
D.E.O.	Female	Queensland	Domestic	31	29 Mar., ,,	Northern Territory	174	Discharged, 15 Feb., 1932.
Ah Hoey	Male	China	Gardener	49	28 May, ,,	Liverpool	175	
P.T.I.	,,	N.S.W.	Labourer	17	9 Dec., ,,	Tweed River	176	Died, 15 Dec., 1933.
J.L.	,,	,,	,,	47	22 ,, ,,	Macksville	177	
L.M.	Female	,,	Domestic	59	14 Sept., 1929	Lismore	178	Discharged, 30 Nov., 1934.
E.W.	,,	,,	,,	33	4 Feb., 1930	Sydney	179	Died, 6 Feb., 1930.
T.G.J.D.	Male	,,	School	13	4 July, ,,	Lismore	180	
R.C.	,,	W. Australia	,,	12	6 Aug., ,,	Sydney	181	
L.B.	,,	Italy	Labourer	39	13 Sept., ,,	Queensland	182	Repatriated to Queensland, 15 Jan., 1931.
A.M.	Female	N.S.W.	Home-duties	19	1 April, 1931	Adamstown, N.S.W.	183	
W.L.	Male	China	Gardener	60	12 Sept., 1931	Kogarah, N.S.W.	184	Repatriated to China, 14 March, 1936.
J.T.	,,	England	Bootmaker	60	29 Jan., 1932	Queensland	185	
A.D.	,,	N.S.W.	Engine-driver	53	30 Sept., 1933	Lakemba, N.S.W.	186	
E.C.H.L.	,,	Victoria	Student	42	15 April, 1934	Manly	187	Discharged, 21 May, 1936.
A.N.	,,	Germany	Labouror	55	30 Aug., ,,	Rockhampton, Q'land	188	Repatriated to Queensland, 5 Nov., 1936.
M.E.M.G.	Female	N.S.W.	Domestic	25	11 Oct., ,,	Lawrence, Clarence R.	189	
I.D.	Female	N.S.W.	Domestic	38	29 Mar., 1936	Bankstown	190	
J.D.C.	Male	Queensland	Student	20	5 Aug., ,,	Goulburn	191	Repatriated to Queensland, 5 November, 1936.
H.P.H.	Male	Straits Settlemts.	.....	46	22 Oct., ,,	Woollahra	192	

NOTES.—(*a*) The cases of a few other persons who, for one reason or other, were never admitted to the lazaret, have been mentioned in the course of the series of Reports, and are additional to those shown in this Table. (*b*) On comparison with the reports for early years, differences in ages or dates of admission of some coloured patients will be observed. Those now given are the correct ages and dates. Patients remaining under treatment have their initials shown in *italics*.

APPENDIX A—*continued.*

RETURN showing admissions, discharges, &c., of Patients suffering from leprosy for the years 1920–1936.

	1920.	1921.	1922.	1923.	1924.	1925.	1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933.	1934.	1935.	1936.
In Lazaret on 1st January	24	24	22	21	16	15	17	15	17	20	20	20	20	19	19	17	18
Admitted during the year	4	3	3	1	2	8	1	4	5	1	4	3	1	2	1	2	3
Died during the year	1	2	2	5	2	...	1	2	1	1	4	2	...	1	2	1	1
Discharged	3	1	2	...	1	4	2	...	1	...	...	...	2	1	1	...	1
Repatriated	...	2	...	1	...	2	...	...	...	...	...	1	...	...	...	...	3
Remaining in Lazaret on 31st December — Total	24	22	21	16	15	17	15	17	20	20	20	20	19	19	17	18	16
Remaining in Lazaret on 31st December — Males	20	17	16	12	11	13	11	14	16	15	17	16	16	16	15	15	13
Remaining in Lazaret on 31st December — Females	4	5	5	4	4	4	4	3	4	5	3	4	3	3	2	3	3

Birthplaces of Lepers.—The inmates of the Lazaret at the close of the year 1936 were of the following nationalities:—New South Wales, 9; West Australia, 1; Australian Aboriginals, 1; Straits Settlements, 1; Pacific Islands, 1; China, 2; England, 1. Total 16.

Working Expenses of Lazaret.—During the year 1936, the total cost of the management of this Institution was £3,398 3s. 10d. Calculated on the average number of inmates, the average cost per inmate per annum was £190 18s. 0d.

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3.—DAVID BERRY HOSPITAL.

Berry, New South Wales.

Report of the Secretary for the year ended 31st December, 1936.

Administrative Staff.—Visiting Medical Officer, Dr. H. M. Hollingworth; Matron, Miss D. G. Cawood; Secretary, A. F. Hale.

Resident Staff.—Matron, Head Nurse, 2 Staff Nurses, 5 Pupil Nurses; 4 Domestic Staff, and 2 Inmate Workers.

Number of Wards and Beds.—Wards, 6; beds, 22; cots, 4.

General Cases.—Beds, 20; cots, 2. *Infectious Cases.*—Beds, 2; cots, 2.

Sir,

I have the honour to submit the Annual Report of this hospital for the year 1936:—

Admissions and Discharges.—Remaining in on 1st January, 1936, 12; admitted during 1936, 510; births, 10; discharged, 470; deaths, 32; remaining in on 31st December, 1936, 20.

In-patients.—The total number of in-patients was 532, as against 507 for 1935, a daily average of 22 compared with 21·25 for 1935. Average annual cost per bed, £174 4s. 11d. Total annual cost, £3,838 7s. 9d.

Out-patients.—The number of out-patients attended was 246, compared with 319 for 1935.

Infectious Cases.—Diphtheria, 16; scarlet fever, 3; measles, 4; whooping cough, 1.

Anaesthetics.—The total number of operations performed was 163—major, 112; minor, 51. Sixty-eight visits were made by the Nowra doctors in connection with these operations—Dr. Rodway, 22; Dr. Ryan, 26; Dr. Thompson, 20.

Collections for the year totalled £402 9s. 11d., as against £428 9s. 1d. for 1935.

New Buildings.—During the year the following new buildings were erected:—An aborigines ward; a maternity ward adjoining the women's ward, and a small general purposes ward adjoining the men's ward.

General.—A new boiler for the hot water service, and a drying cabinet for the laundry were installed; as well as an improved water service as a protection in case of fire.

The buildings and grounds are in fair order.

A. F. HALE,
Secretary.

4.—STRICKLAND CONVALESCENT HOSPITAL FOR MEN AND WOMEN, "CARRARA," ROSE BAY.

Report of the Matron for the year ended 31st December, 1936.

Visiting Medical Officer.—Dr. L. R. Parker.

Staff.—Resident staff at 31st December, 1936—Matron (Miss V. K. Angus); three trained and three pupil nurses; other female staff, six; attendants (male), two.

Bed Accommodation.—Males, 40; females, 80; total beds, 120.

Admissions and Discharges.—Remaining in hospital 31st December, 1935, 56 (22 males, 34 females). Admissions during 1936 totalled 1,287 patients, of whom 342 were males and 945 females; the discharges numbered 1,265 (340 males, 925 females); 78 patients (24 males, 54 females) remained in residence on 31st December, 1936. The daily average of occupied beds for the year was 78 (23 males, 55 females). Average annual cost per occupied bed, £62 1s. 7d. Total expenditure for the year, £4,842 4s. 2d.

Improvements.—In addition to constructional and maintenance work to the main buildings, during the year a considerable amount of work has been carried out about the grounds, particularly in the formation of stone retaining walls and cemented pathways, and the provision of recreation areas, etc.

The Matron reports that patients are happy during their stay at "Carrara," and mostly show a marked improvement in health and a gain in weight. Several sick patients were re-admitted for a further stay at this delightfully situated home.

5.—WATERFALL SANATORIUM.

Annual Report of the Medical Superintendent for the year ended 31st December, 1936.

Honorary Consulting Physicians.—Dr. Cecil Purser and Dr. E. W. Fairfax.

Honorary Radiologist.—Dr. A. T. Nisbet.

Resident Staff.—Medical Superintendent, Dr. H. W. Palmer; Senior Medical Officer, Dr. B. A. Serjeant; Junior Medical Officer, Dr. A. L. Waddington; Manager, Mr. E. C. Barrett; Clerk and Storekeeper, Mr. A. Douglass; Matron, Miss K. Walsh; 1 Sub-matron, 32 Nurses, 1 Junior Clerk, 14 Male Attendants, 5 Cooks and 9 Artisans. A Dentist visits the Sanatorium two full days a month.

Bed Accommodation.—There are 292 beds for males and 136 beds for females. Total beds, 428.

Number of tuberculous patients dealt with during 1936, 881.

Number of patients remaining in on 1st January, 1936, 386; admitted during 1936, 495. Total under treatment, 881. Discharged during the year, 386 (arrested, 1; quiescent, 16; much improved, 124; improved, 220; stationary, 18; worse, 7); died, 107. Remaining in residence on 31st December, 1936, 388 patients (males, 256; females, 132).

Average daily number of beds occupied, 385.

Total cost of maintenance, £32,701 7s. 11d.

Average annual cost per patient, £84 18s. 9d.

CONDITION on discharge and average residence in days of the patients discharged during 1936.

Condition on Discharge.	No. of Patients.	Average Residence in days.
Arrested	1	2,406
Quiescent	16	378
Much Improved	124	297
Improved	220	145
Stationary	18	79
Worse	7	774
Died	107	406
Total	493	257

"Arrested": A case where no tubercle is present in sputum, and where the disease has been quiescent for two years.
"Quiescent": To have no symptoms or signs of tuberculosis, except such as are compatible with a completely healed lesion.
"Much Improved": Is where the general health is good, and the signs and symptoms of tuberculosis are materially diminished, while working capacity is more or less restored.

This is the scheme for classification of tuberculous patients formulated by the New South Wales Board of Control for the Campaign against Tuberculosis, and adopted by the various organisations.

CONDITION of Patients on Admission and Discharge.

Condition on Admission.	Arrested.	Quiescent.	Much Improved.	Improved.	Stationary.	Worse.	Died.
L1, T1	1	2	...	1	...	...	...
L2, T1	...	6	18	13	1	...	2
L3, T1	...	5	52	98	9	3	22
L1, T2	...	...	...	1	...	...	...
L2, T2	1	1	5	3	1	...	...
L3, T2	...	2	46	96	7	4	56
L1, T3	...	...	...	...	...	...	...
L2, T3	...	...	...	...	...	...	...
L3, T3	...	...	3	8	...	...	27

L1, signifies disease limited to a part of one lobe of a lung, or slightly to two lobes.
L2, signifies extensive disease limited to one lobe, or moderately to two lobes.
L3, signifies where there is more disease than in L2.
T1, is where toxic symptoms are slight, or complications not extensive.
T2, is where toxic symptoms are present but not serious, or where complications are not extensive.
T3, is where toxic symptoms or complications are more serious.

This is the classification of tuberculous patients formulated by the Board of Control of the Campaign against Tuberculosis, and adopted by the various organisations.

OCCUPATIONS of Patients Discharged or Died during 1936.

Occupation.	Number.	Occupation.	Number.	Occupation.	Number.
Housewives	72	Mechanics	34	Government Employ	16
Labourers	86	Factory hands	21	Children	14
Housework	45	Building trades	18	Professions	13
Indoor trades	40	Farmers	16	Outdoor trades	12
Shop assistants	35	Mining (quartz)	16	Seamen	8
Clerks	34	,, (coal)	5	Waiters	8

BIRTHPLACE of Patients Discharged or Died during 1936.

Country.	Number.	Country.	Number.
New South Wales	311	New Zealand	10
England	62	Wales	8
Other Australian States	60	Europe	7
Scotland	14	Other Countries	8
Ireland	13		

TABLE showing the Age Period at which the first symptoms of infection arose, and the number of male and female persons infected in each period, of all patients admitted since 1909. No re-admitted case is included a second time in this table.

Sex.	1 to 9 years.	10 to 15 years.	16 to 19 years.	20 to 29 years.	30 to 39 years.	40 to 49 years.	50 to 59 years.	Over 59 Years.
Male	76	154	366	1,809	1,863	1,649	974	94
Female	78	186	429	1,327	853	395	195	51

Careful inquiry was made in every case for any history of contact infection. Among the male cases, only 681 patients gave a history of infection or 9·7 per cent., while among the female cases admitted, 597 patients gave a history of infection or 17 per cent. For all patients admitted the percentage is 12·1 per cent.

TABLE showing the relative incidence of infection of male and female members of the families giving a tuberculous family history.

Member in Family Infected.	Male Patients.	Female Patients.
	Per cent.	Per cent.
Mother	11·7	18·7
Father	11·5	11·4
Sister	14·1	17·9
Brother	24·8	9·6
Wife or husband	9·3	9·3
Mother and father	2·8	2·4
Mother, father, brother and sister	2·1	1·8
S isteand brother	3·	4·7
Father and brother	2·9	1·4
Mother and brother	1·4	·8
Mother and sister	1·7	2·
Father and sister	1·4	2·5
Mother, brother and sister	·4	2·7
Father, brother and sister	·3	·7
Husband or wife, with son	1·2	·7
Husband or wife, with daughter	·6	2·
Daughter	1·6	3·5
Son	2·3	1·4½
Other infected persons	5·1	8·2

TABLE of Yearly Results, 1932 to 1936.

Year.	In Residence beginning of year.	Admitted during year.	Arrested or quiescent.	Much Improved.	Improved.	Not Improved.	Died.
1932	414	476	32	60	139	150	106
1933	403	481	44	71	157	161	99
1934	352	555	50	150	177	124	68
1935	338	535	24	164	162	55	82
1936	252	495	17	124	220	25	107

GENERAL REVIEW OF THE YEAR'S WORK.

The foregoing tables show the number of patients undergoing treatment during the year 1936, and the condition of those discharged. Of the patients admitted, 167 males and 92 females had the disease in an advanced stage, but without serious complications, but 138 males and 59 females had extensive disease with serious complications, so that these latter cases were hopeless prior to admission. As far as the admissions during the year are concerned, only 39 were admitted with any reasonable chance of successful treatment.

Not one of the cases with serious complications should have been sent here, but should have been treated under hospital conditions nearer their homes. It should also have been possible for patients with complications in residence at Waterfall at the beginning of the year, to have been transferred to the Randwick Auxiliary Hospital; but Randwick at present is quite incapable of dealing with these cases. During the whole year it has been possible to transfer there, and with great difficulty, only 17 patients.

Conditions being what they are as to the type of cases admitted to Waterfall, the results obtained, no doubt, are satisfactory. Many of the patients admitted with extensive disease without complications are of a chronic character, where permanent injury has been done, but where little active disease is present, that requires special treatment. Many cases of this type return here from time to time, as they find the conditions specially attractive. During the year 98 men were re-admitted of whom very few required any special attention. All of these cases have the invalid pension; while here before they have learnt all the sanatorium health rules, and know how to look after themselves outside, but come in for personal reasons because they prefer the easy, comfortable conditions here. Patients of this class should only be re-admitted if definitely in ill health.

Of the patients discharged during the year, 13 men were transferred to the Red Cross Hospital at Exeter; and one case to the Picton Lakes Village Settlement, all being quiescent cases.

Ten cases (returned soldiers) were sent to the Repatriation Commission, which now treats all tuberculous soldiers.

Treatment was along routine sanatorium lines, but each case is given individual treatment. All cases, while the disease is active, are kept at rest in bed, and given the maximum of fresh air and necessary amount of sunshine. Diet is liberal and varied, care being taken in so arranging the menu that similar meals occur at long intervals.

Special treatments are given, when considered useful, each case being individually considered. Where possible, artificial pneumothorax treatment is given, forty-six cases being treated by this method during the year. Intra-laryngeal injections of Metaphen in oil were given weekly to a number of cavity cases, with promising results. Gold treatment by the use of Solganol B in oil, and halivol oil, mutton bird oil and cod liver oil with and without bicalcium phosphate were used where desired.

During the year a survey of all cases, suitable for surgical interference was made, and several cases selected for thoracoplasty.

Considerable difficulty has been experienced during the year, in obtaining the necessary nursing staff to efficiently meet all requirements. Unfortunately, there has frequently been some overcrowding in both men and women's wards, and as many very ill cases have to be admitted, the work of the nursing staff has been heavy.

Many changes took place among the administrative staff during the year, Mr. R. C. Rowe, the late Manager, retired in February, and Mr. A. Douglass acted as Manager until Mr. E. C. Barrett took over these duties in September. Dr. Shannon, the Senior Medical Officer, was transferred to the Head Office, and Dr. B. A. Serjeant was appointed during August in his place.

Maintenance of Buildings and Improvements.—Owing to the financial stringency no new buildings or improvements were possible. For the same reason maintenance repairs had to stand over, but special funds were provided, so that the staff were able to complete the exterior painting of all the sanatorium buildings, while the internal walls and fittings were kept in good order.

Towards the end of the year an electric griller was installed, and after some adjustments were made, proved very satisfactory.

The entrance garden and grounds could not be extended, as intended, but were kept in good order and appreciated.

All essential services have been well maintained, though a serious shortage of water during December caused restriction to be placed on the use of water for all purposes.

The milk supply has been most satisfactory, the Berry Child Welfare Farm supplies the larger proportion, while the rest of the milk comes from Unanderra, both supplies being much richer than milk supplied from Sydney.

The patients were well supplied with various amusements; concert parties visited the Sanatorium on numerous occasions, and there were cinema (" talkie ") performances generally twice a week.

Our thanks are due to the film proprietors, the Hon. R. B. Orchard, Esq., O.B.E., Mr. R. Lawson, the Smith Family, and the visiting artists who have made these entertainments so successful.

In addition to these forms of amusement, there are wireless attachments to each bed, libraries for both men and women, billiard tables and other indoor games for both divisions and a bowling green for the men and a croquet lawn for the women patients.

The canteen and most of the amusements are controlled by the Patients' Committee, the funds of the canteen helping to defray the cost of the amusements.

Patients who are well enough can use the carpenter's shop where machinery is installed; or can work garden plots, the vegetables grown being bought from the patients for use by the Sanatorium.

Few children were admitted during the year. Any children found affected with tuberculosis should be given a chance at Waterfall, where there is special accommodation for young children and where they do well. The Education Department has provided a school and teacher so that their education is not neglected.

University Medical Students, during their final years of study, are given demonstrations, this being part of their medical course.

In New South Wales the Board for the Control of Tuberculosis has developed valuable co-ordination and co-operation between all the different agencies concerned in the control of tuberculosis and a certain amount of success has been obtained. Unfortunately, financial stringency hampered progress during recent years, but with the improvement now evident throughout the community, considerable progress should be possible.

For years it has been recognised that there should be a large increase in the number of beds available at Randwick Auxiliary Hospital for advanced tuberculous patients of both sexes, as additional beds there would relieve other hospitals and Sanatoria and allow their beds to be used for earlier and more suitable cases.

There is also an urgent need to provide some special institution for the well chronic case, who requires no special treatment yet fills such a large percentage of the sanatoria beds, urgently needed for early hopeful cases. These chronic cases all have the invalid pension, have been taught all the sanatorium rules as to their well-being, and will only use the Sanatorium as a convenience for themselves. There are quite a number who come in periodically, stay a few weeks or months, then take their discharge, to repeat the process again in a short time. On each discharge they collect any money due locally, then collect the money due (a full month's pension) and as they collect another pension payment within a fortnight, they do well, returning in a few weeks often much the worse for their outing, to be nursed back to health, to repeat the process. Sanatorium privileges are too restricted and important to be used for chronic patients whose requirements can be amply met by the accommodation provided in a well-managed hostel.

A certain number of the chronic tuberculous pensioners would be glad to do work of a light character, but while earning money they do not receive their pension, and frequently do not earn sufficient to live on. If these men could be granted a proportion of their pension while endeavouring to regain their footing at regular work, it is probable that a number might, in time, become self-supporting.

Before the control of tuberculosis can be satisfactorily established, early diagnosis and proper treatment must be possible. For early diagnosis to be made, the public must be educated to suspect the presence of the disease, and the medical profession must be prepared to give the time and serious thought necessary to establish a correct diagnosis.

The general education could be done by public propaganda and offers little difficulty, save expense, while the aid of the medical profession could be obtained by personal canvass by an officer who could explain all the facilities available for both diagnosis and treatment, if necessary.

Frequently cases are diagnosed in the early stages of the disease; the person being a bread-winner feels he cannot afford to give up his work and undergo treatment, as his wages are necessary for the support of his family. If he were granted a minimum wage while undergoing treatment, this difficulty would disappear, with a fair chance of recovery if treatment is given.

The initial expense would probably be much less than what occurs now, as the State has to shoulder the responsibility of maintaining, in one way or another, all these families, when the bread-winner finally breaks down in health, and becomes till he dies, an invalid pensioner, a burden and danger to those around him, and at best a useless citizen.

These matters require the serious consideration of both the Commonwealth and State authorities. If public health is important for the well-being of the community, so is the health of the individual, and no disease can be controlled without the expenditure of time, brains and money.

Tuberculosis takes so heavy a toll out of the earning capacity of the community, without mentioning the sorrow and loss of life it causes, that one wonders why the " Powers that be " have never considered it necessary to provide the moderate financial assistance needed to control this still serious disease.

H. W. PALMER,
Medical Superintendent.

6.—LIDCOMBE STATE HOSPITAL AND HOME FOR MEN.

Report of the Medical Superintendent for the year ended 31st December, 1936.

Honorary Visiting Staff.—Honorary Staff Surgeon, H. C. Rutherford Darling, M.D., M.S., F.R.C.S.; Honorary Assistant Surgeon, J. A. Lawson, M.B., Ch.M.; Honorary Ear, Nose and Throat Surgeon, N. M. Macindoe, M.B., Ch.M.; Honorary Opthalmic Surgeons, Falkner J. Blaxland, M.D.; A. E. F. Chaffer, Ch.M.; Honorary Urologist, C. M. Edwards, M.B., Ch.M.; Honorary Dermatologist, A. E. Panting, M.B., B.S., B.Sc.; Honorary Radiographer, Colin R. Cole, M.B., Ch.M.

Staff—Administrative Staff.—Medical Superintendent, H. V. D. Baret, B.A., M.B.; Senior Medical Officer, J. McManamey, M.B., B.S.; Junior Medical Officers, S. de Vere Franklin, M.B., Ch.M.; R. Sheldon, M.B., B.S.; Manager, J. J. Ranshaw; Assistant Manager, J. M. Booler; Matron, Miss E. M. Copeman; Sub-matron (vacant).

Nurses	49	Other Female Staff	5
Attendants	78	Other Male Staff	31

A Dentist visits the institution each week, and an X-ray Technician twice a week.

Number of Wards and Beds.

Hospital Division.		General Division.		Total Accommodation.	Number of Beds.
Ward No.	Number of Beds.	Dormitory. No.	Number of Beds.		
4	27	9	75		
5	43	12	60		
6	61	21	75		
7	58	22	75		
10	70	23	75		
11	65	24	75		
14	50	25	75	Hospital Division	990
16	61	26	75		
17	61	27	3	General Division	872
18	61	...	...		
19	61	31	64		
20	50	32	64		
27	110	33	64		
28	114	34	27		
29	50	35	25		
Infectious Division	48	Emergencies (Hospitals) Outside Locations	6 34		
16	990	14	872	Total	1,862

The foregoing figures represent the total capacity of the various hospital wards and dormitories and show accommodation for 990 patients and 872 inmates—a total of 1,862.

Admissions, Discharges, etc.

31st December, 1935, to 31st December, 1936.

	Hospital Division.	General Division.	Infectious Division.			Grand Total.
			Male.	Female.	Total.	
In institution on 31 Dec., 1935...	884	581	19	13	32	1,497
Admissions	1,766	1,599	168	203	371	3,736
Transfers	272 (From Yd.)	244 (From Hos.)	...	...	...	516
	2,922	2,424	187	216	403	5,749
Discharges	1,158	1,370	166	200	366	2,894
Deaths	607	3	6	2	8	618
Transfers	244 (From Yd.)	272 From Hos.)	...	...	...	516
	2,009	1,645	172	202	374	4,028
In institution on 31 Dec., 1936...	913	779	15	14	29	1,721

Towards the end of the year the George-street Home, Parramatta, in which approximately 250 inmates were accommodated, was closed, and the inmates transferred to this institution.

Daily Average Number of Patients and Inmates Resident.—1929, 1,630; 1930, 1,591; 1931, 1,563; 1932, 1,556; 1933, 1,539; 1934, 1,516; 1935, 1,562; 1936, 1,585.

Cost of Maintenance and Treatment.—In 1936 the total cost of maintenance and treatment of patients and inmates was £78,641 9s. 10d. The average annual cost of patients and inmates was £49 12s. 4d.

Work of Honorary Medical Officers.—The various honorary surgeons and specialists continue to do excellent work. Apart from their valued advice in consultations and diagnosis, the following operations were performed by them during 1936 :—Dr. Darling, 28; Dr. Lawson, 21; Dr. Blaxland, 16; Dr. Chaffer, 17; Dr. Macindoe, 10; Dr. Edwards, 58; Dr. Cole, Honorary Radiologist, paid 25 visits; Dr. A. E. Panting, Honorary Dermatologist, visited the hospital on 27 occasions. He resigned his position in October, 1936.

Work of the Staff.—The resident medical officers carried out 26 major and minor operations. The work of the staff generally has been maintained at the usual high standard.

X-Ray Department.—This Department continues to give excellent service. 1,000 separate cases were examined and 1,418 films were used.

Massage Department.—The massage department continues to do good work; 112 individual cases received treatment, of these, 39 can be classed as recovered, 28 relieved, 14 unrelieved, and 31 are still under treatment.

Infectious Division.—During the year 403 patients were treated, the great majority of cases being scarlet fever and diphtheria.

Bake-house.—In addition to supplying the needs of this institution, bread is also supplied to Newington State Hospital and Home and Waterfall Sanatorium. Until that institution was closed in December last bread was also supplied to the George-street Home, Parramatta.

During the year 1936, 989,561 lb. of bread and cake were produced at an average cost of 1·165 pence a pound.

Laundry.—With the increase in the inmate population consequent on the transfer of the inmates from the George-street, Home, Parramatta, the laundering facilities at this Institution have been found to be inadequate. Request has been made for the replacement of three washing machines and three hydro-extractors, which are obsolete, and for the provision of such other equipment, including a drying tumbler, as will enable this section to meet present demands.

Recreation.—A number of first-class concerts have been given during the year by friends interested in the welfare of the inmates. The billiard room and bowling green continue to be popular in providing recreation. Arrangements have been made for the re-conditioning of the radio installation, which has not been giving satisfactory service and much better results are anticipated in the future.

Road and Path Construction.

During the year further progress was made by the Public Works Department in the re-conditioning of roads and footpaths and the completed portion of the work has enhanced the appearance of the grounds.

A new lavatory block, with modern fittings, including showers, is now in use. This improvement is of considerable benefit to the inmates.

Additions to the general store have been completed, and should provide adequate space for housing stores for some years to come.

Dairy and Farm.

The extremely dry conditions that prevailed throughout the greater part of the year had their effect upon the operation of the dairy. During the year 90,867 gallons of milk were produced. Thirty tons of green fodder were grown.

Gardens and Grounds.—The condition of the gardens and grounds has been well maintained throughout the year. Improvements are still being made with a view to beautifying the grounds surrounding the buildings.

Piggery.—As in previous years, weekly sales of pigs were effected and £797 13s. 8d. was received from these sales. In addition, pork weighing 5,480 lb. was supplied to the kitchen for use of inmates.

Vegetable Garden.—The vegetable garden yielded 180,670 lbs. of vegetables during the year.

H. BARET,
Medical Superintendent.

7.—LIVERPOOL STATE HOSPITAL AND HOME FOR MEN.

Report of the Medical Superintendent for the year ended 31st December, 1936.

Honorary Visiting Staff.—Consulting Surgeon, B. T. Edye, F.R.C.S.; Surgeon, I. D. Miller, M.B., F.R.C.S.; Assistant Surgeon, C. H. Swanton, M.B., F.R.C.S. (on leave); Assistant Surgeon, A. L. Webb, M.B., F.R.C.S.; Assistant Surgeon, J. A. Lawson, M.B., Ch.M., F.R.A.C.S.; Anaesthetist, J. Goldman, M.B., Ch.M.; Ear, Nose and Throat Surgeon, H. J. Eizenberg, M.B., B.S.; Dermatologist, W. A. McDonald, B.A., M.B., Ch.M.; Assistant Anaesthetist, K. B. Shallard, M.B., Ch.M.

Staff.—Medical Superintendent, Donald Wallace, M.A., M.B., Ch.M.; Medical Officer, C. R. O'Brien, M.B., Ch.M.; Visiting Medical Officer, J. Piric, L.R.C.P., L.R.C.S. (Edin.), L.F.P.S. (Glasgow); Manager, S. T. Creagh; Matron, L. W. McIntosh.

Constitution of the Hospital Staff on 31st December, 1936.—Medical Superintendent, Medical Officer, Visiting Medical Officer, Manager, Matron, Sub-matron, Nurses, 25; Clerks, 2; Office Assistant, Storekeeper, Dispenser, Male Attendants, 18; other Male Staff, 12; other Female Staff, 1. A Dentist visits the Institution fortnightly.

Number of Wards and Beds.—Hospital Division, 11 wards containing 309 beds; General Division, 13 dormitories containing 552. Total accommodation, 861 beds.

Admissions and Discharges for the year ended 31st December, 1936.—In residence 1st January, 1936, 828; admitted during year, 2,611; discharged, 2,385; died, 226; remaining 31st December, 1936, 828; average daily number resident, 832. Total cost of maintenance and treatment of patients and inmates, £37,922 7s. 9d.; average cost per inmate, £45 11s. 7d.

Summary of Patients Treated in the various Wards during 1936.

Hospital Section.	In Hospital, 1st January, 1936.	Admitted during year.	Discharged during year.	Died during year.	In Hospital, 31st December, 1936.
Cancer Wards	68	143	87	65	59
General ,,	205	540	398	136	211
Totals	273	683	485	201	270
District Ward	23	548	524	25	22
Grand Totals	296	1,231	1,009	226	292

Out-patients.—15,402 attendances were recorded during the year, including 3,752 dressings and operations in the district ward.

Hospital Ward.—The general hospital accommodation was fully utilised throughout the year. 208 operations were performed under general anaesthesia, 62 of which could be classed as major operations.

Improvements.—A new residence for the Medical Superintendent was completed and occupied.

The old and dilapidated dairy structures were replaced by the erection of up-to-date buildings for milking, storage of fodder, and housing of the men engaged at the dairy.

A commencement was made in October on the reconditioning and remaking of roads within the institution boundaries and good progress is being made with the work.

The provision of hospital accommodation in the Liverpool district for women patients cannot be too strongly urged. Considerable numbers of women and children are seen at the Out-patient Department and when surgical treatment is needed by female children up to 8 years of age this is given at very great inconvenience at this hospital. Those over the age of 8 years requiring surgical treatment, however, have to arrange for it elsewhere.

An up-to-date X-ray equipment is a necessity.

Recreation of Inmates.—Regular entertainments were provided throughout the year by various organisations and " The Smith Family " arranged broadcast concerts from our amusement hall.

During the festive Christmas season gifts of sweets, fruit and cake were received and distributed to the inmates, and in this connection the thanks of the administration and the inmates are tendered to all concerned.

D. WALLACE,
Medical Superintendent.

Manager's Review of Outdoor Work for the Year ended 31st December, 1936.

The supply of inmate labour was fairly well maintained throughout the year, and satisfactory progress was made with outdoor work.

A new irrigation canal was completed towards the end of the year and put into use. Drought conditions obtained practically throughout the year, but a fairly good supply of vegetables was produced.

The dairy herd was improved by the addition of eight new animals. The result of the tuberculin test showed the herd to be 100 per cent. tubercle-free.

One hundred young fruit trees were planted.

The production in the various sections for the year was :—Dairy milk, 34,051 gallons; vegetables, 53,685 lb.; fruit, 6,550 lb.; fodder, 9 tons.

Piggery.—Revenue derived from the sale of pigs amounted to £423 19s. 2d.

Bakery.—Bread, buns and cake required for the institution are made at the institution. The quality of these products was maintained and the consumption was :—Bread, 257,783 lb.; buns, 250 dozen; cake, 19,125 lb.

Condition of Buildings.—Painting of the interior of buildings has been proceeded with. The exteriors, however, are badly in need of attention, and the Public Works Department has had this matter in hand for a considerable time.

Gardens and Grounds.—The condition of the gardens and grounds has been maintained throughout the year.

S. T. CREAGH,
Manager.

*50543—R

8.—NEWINGTON STATE HOSPITAL AND HOME FOR WOMEN.

Annual Report for year ended 31st December, 1936.

Honorary Medical Staff.—Surgeon, Walter A. Ramsay Sharpe, M.B., F.R.C.S. (Edin.); Neurologist, Andrew Davidson, M.D.; Ophthalmic Surgeon, Grosvenor John Williams, M.B., Ch.M. (Sydney).

Staff.—Medical Superintendent, Howard K. Denham, B.A., LL.B., M.B., Ch.M.; Visiting Medical Officer, Francis H. Furnival, M.R.C.S. (Eng.), L.S.A. (Lond.); Medical Officer, Lottie Sharfstein, M.B., Ch.M.; Manager, S. J. Warner; Matron, Emily Wood; Sub-matron, 1; Nurses, 41; Dispenser, 1; Clerk, 1; Junior Clerk, 1; Storekeeper, 1; other Female Staff, 5; other Male Staff, 14.

A Dentist visits the Institution fortnightly.

Total Admissions and Discharges.—Inmates in the institution on 1st January, 1936, 562; admitted during year, 1,191; discharged, 931; died, 245; remaining on 31st December, 1936, 577; average daily number, 583.

Total Expenditure.—£28,223 19s. 11d.; average annual cost per bed, £48 8s. 3d.

Hospital Division Statistics.—Beds available, 392. The statistics for the year 1936 are as follows:—In hospital on the 1st January, 1936, 310; admitted, 811; discharged, 559; died, 245; remaining in hospital on 31st December, 1936, 317.

Classification of Cases Discharged.—General diseases, 201; alimentary, 27; circulatory, 381; genito-urinary, 24; osseous and arthritic, 36; nervous, 161; respiratory, 52; skin and glands, 31; wounds and fractures, 47; senility, 175; miscellaneous, 53; total 1,188.

Review of Work.

Garden and Grounds.—It is pleasing to report that during the year in spite of the droughty conditions prevailing, the gardens in the institution precincts were maintained with efficiency and flowers were supplied to the hospital wards.

During the year improvements have been made in certain areas which help to beautify the hospital grounds; and the installation of drinking fountains has proved a boon to both inmates and visitors to the institution.

Laundry.—A new steam-heated ironing press has been installed, and has proved to be a useful asset in the efficient working of the laundry. In addition a new steam 4 rolls Flatwark ironer has also been installed in lieu of an older model that has been in use for many years, and good results are being obtained from its use.

Kitchen.—By the reconstruction of the flues of the main kitchen range, a nuisance that has troubled the staff for some years has been overcome, and a hot-water and steam service for the cleaning and sterilizing of kitchen utensils has been installed.

Radio Installations.—Loud speakers have been introduced into two hospital wards from a set in the recreation hall, and is proving a welcome addition to the recreation of the patients in this section. It is hoped during the coming year to introduce wireless into all the wards of the institution.

A radio set has also been installed in the men's section, and is much appreciated by the inmates.

Amusements.—During the year numerous entertainments were provided by many friends of the inmates, and the thanks of the staff and inmates is given to them and particularly to the Smith Family for their unceasing generosity in providing concerts and Xmas Cheer during the year.

A broadcast was also provided by the Smith Family which was very successful and enjoyed by all who participated.

The introduction of community singing has provided the inmates with further amusement, and is much enjoyed.

Maintenance of Buildings, etc.—All buildings have been efficiently maintained, and the essential services of the institution have been also satisfactorily carried out.

H. K. DENHAM,
Medical Superintendent.

Dairy and Piggery.

Dairy.—The standard of the milking herd has been fully maintained throughout the year, and a yield of 36,872 gallons of milk was produced.

Piggery.—The purchase of prize Berkshire Boars at the Royal Show has proved to be justified, and the standard of the pigs reared during the year has improved.

During the year pigs sold realised approximately £380.

Revenue Collections.

	£ s. d.	£ s. d.
Farm produce, etc.	657 8 7	
Other sales	84 18 9	
		742 7 4
Maintenance—		
Collected from sundry persons	1,438 8 9	
Contribution by Commonwealth towards maintenance of pensioners	8,130 16 11	
		9,569 5 8
Total	... ... £	10,311 13 0

S. J. WARNER,
Manager.

9.—GEORGE STREET HOME, PARRAMATTA.

REPORT for the period 1st January to 11th December, 1936 (on that date the property was vacated by the Health Department and handed over to the Resumed Properties Branch).

Staff, prior to 11th December, 1936.

Visiting Medical Officer.—Dr. W. S. Brown.

Officer-in-charge.—G. M. Strange.

Attendants, 5.

Number of hospital beds, 16; dormitory beds, 332; total, 348.

Admissions and Discharges.—Remaining in the Home on 31st December, 1935, 244; admitted from 1st January to 30th October, 1936, 1,810; discharged, 2,038; deaths, 16; inmate workers transferred to other institutions, 496; remaining in the Home on 11th December, 1936, nil.

Number in Hospital on 31st December, 1935, 16; admitted in 1936, 120; discharged, 46; died, 16; transferred to other institutions, 74; remaining in hospital on 11th December, 1936, nil.

Average daily number, 1st January, 1936, to 2nd November, 1936, 242; average annual cost per inmate, £28 5s. 11d.; total cost, £6,847 6s. 2d.

Closing of the George-street (Parramatta) Home.—Admissions to the George-street Home ceased on 30th October, 1936; and on 2nd November the transfer of the inmates to the Lidcombe State Hospital and Home was commenced. The last inmate was discharged from the George-street Home on 7th December, 1936.

All the stores and plant were removed either to the Lidcombe State Hospital and Home or to the Newington State Hospital and Home by vehicles belonging to those institutions, and this work was completed on 10th December. On the following day (11th December, 1936) the property was handed over to the Resumed Properties Department.

Historical.—At the time of its closure this picturesque old building had been in use for about a hundred and twelve years. Erection of the building was begun in 1822 during Governor Macquarie's term of office, and was completed and occupied in 1824 as a barracks for the military; and for housing chain gangs of prisoners then employed at Parramatta.

The main building was first used as a Government Asylum in March, 1862; the first Superintendent was Mr. Dennis and the first Matron, Mrs. Dennis.

A tweed factory erected by J. and W. Byrnes on adjoining property was later absorbed into the Asylum and used for hospital wards till the year 1920, when the building became too dilapidated for further use and was demolished.

10.—STATISTICAL SUMMARY.

TABLE I.—Summary Statement of Expenditure, State Hospitals and Homes of Lidcombe, Liverpool, and Newington, §George Street Home, Parramatta; Waterfall Sanatorium, and Strickland Convalescent Hospital for the year ended 31st December, 1936.

Head of Expenditure.	Lidcombe.	Liverpool.	Newington.	§George Street Home, Parramatta.	Waterfall Sanatorium.	Strickland. Hospital.	Total.
Salaries and Payments in the Nature of Salary	35,419 19 6	14,211 12 0	11,872 1 2	1,859 2 9	13,587 17 9	1,719 18 7	78,670 11 9
Gratuities to Inmates	5,065 16 5	3,230 3 1	2,100 15 4	374 10 10	2,130 2 6	338 3 0	13,239 11 2
Provisions	22,039 5 7	10,355 8 0	6,282 1 4	2,421 19 1	10,243 9 9	1,956 9 4	53,298 13 1
Drugs, Dressings, Surgical Appliances, etc.	1,853 4 8	1,057 2 2	760 1 7	8 6 7	423 10 8	11 15 5	4,119 1 1
Fuel and Lighting	2,672 1 2	1,975 14 11	1,461 4 1	198 9 9	1,846 7 4	250 4 10	8,404 2 1
Forage	4,107 13 5	1,748 2 11	2,409 10 4	.....	169 8 1	.....	8,434 14 9
Materials for Minor Repairs, Additions and Renewals to Buildings and Plant	1,310 6 5	636 13 8	510 10 4	48 10 11	696 3 9	92 8 5	3,294 13 6
Transport Expenditure, including Freight and Cartage	1,400 19 6	808 10 9	561 10 9	207 9 4	1,450 11 10	22 13 11	4,451 16 1
Clothing and Drapery	5,580 1 6	1,457 16 3	1,498 9 8	753 14 5	707 5 6	139 2 8	10,136 10 0
Hardware, Ironmongery and General Stores	930 19 10	920 2 7	340 7 6	100 1 5	708 6 5	102 4 9	3,102 2 6
Furniture	265 11 6	84 19 0	28 16 9	.....	.....	57 9 9	436 17 0
Office Expenses, Telephones, Stationery and Printing	489 10 3	218 12 8	202 1 9	49 15 1	163 10 6	62 4 0	1,185 14 3
Livestock and Farm and Garden Requisites	162 17 11	135 1 3	150 4 2	.....	80 11 0	2 3 6	530 17 10
Miscellaneous	351 1 0	190 15 7	688 1 2	70 19 11	245 13 4	21 2 9	1,567 13 9
	81,654 8 8	37,039 14 10	28,865 15 11	6,093 0 1	32,452 18 5	4,776 0 11	190,872 18 10
Add Exchange	1,180 5 1	505 17 4	1,068 15 1	811 2 6	874 14 10	186 16 0	4,627 10 10
	82,834 13 9	37,536 12 2	29,934 11 0	6,904 2 7	33,327 13 3	4,962 16 11	195,500 9 8
Deduct Exchange	2,771 3 2	15 17 7	1,134 19 11	870 4 10	52 11 0	.....	4,844 16 6
Total	80,063 10 7	37,520 14 7	28,799 11 1	6,033 17 9	33,275 2 3	4,962 16 11	190,655 13 2
Stock on hand, 31st December, 1935	6,101 5 5	4,389 16 10	3,273 0 0	846 9 11	2,006 6 6	379 14 10	16,996 13 6
Grand Total	86,164 16 0	41,910 11 5	32,072 11 1	6,880 7 8	35,281 8 9	5,342 11 9	207,652 6 8
Deduct—							
Stock on hand, 31st December, 1936	6,140 18 6	3,248 2 0	3,106 3 10	.....	2,065 15 6	474 10 5	15,035 10 3
Proceeds of Sales, etc.	1,382 7 8	740 1 8	742 7 4	33 1 6	514 5 4	25 17 2	3,438 0 8
Total Deductions	7,523 6 2	3,988 3 8	3,848 11 2	33 1 6	2,580 0 10	500 7 7	18,473 10 11
Total Cost	78,641 9 10	37,922 7 9	28,223 19 11	6,847 6 2	32,701 7 11	4,842 4 2	189,178 15 9
Average daily population	1,585	832	583	242	*507	†98	3,847
Average annual cost per inmate	49 12 4	45 11 7	48 8 3	28 5 11	64 10 0	49 8 3	49 3 6
Annual contributions towards maintenance	17,361 14 6	6,891 10 0	9,569 5 8	892 10 0	5,402 19 0	671 6 9	40,789 5 11

* Patients, 385 (£84 18s. 9d.) or plus inmate workers, 122 (£64 10s. 0d.). † Patients 78 (£62 1s. 7d.) or plus inmate workers 20 (£49 8s. 3d.)
§ George Street Home, Parramatta, was closed on 11th December, 1936.

Section IV.

Report of the Principal Microbiologist for the year ended 31st December, 1936.

Staff.

Principal Microbiologist.—Ernest Leslie Morgan, M.B., Ch.M.

Assistant Microbiologists.—Elsie J. Dalyell, M.B.; Stanley M. King, L.R.C.S., M.R.C.P.; Karen Helms, M.B., Ch.M. (on leave from 22nd June, 1936); K. H. Grieve, M.B.; Elizabeth Frances Lois Laurie, M.B., B.S., 1933 (from 22 June, 1936), temporary.

Senior Laboratory Assistant.—John O. Sergeant; 1st and 2nd Laboratory Assistants, and 8 Assistants. Attendants, 4.

Clerical.—Shorthand-writer and typist, 1; office assistant, 1; telephone attendant, 1 (from 30 November, 1936); temporary messenger, 1.

Sir,

I have the honour to submit the following summarised report dealing with the work performed in the Microbiological Laboratory during 1936.

The amount of revenue collected from examinations, sale of sera, etc., was £872 7s.

The volume of work for the year as represented by the number of specimens examined is set out below :—

	1935.	1936.
General Laboratory examinations	... 77,108	88,043
Examination of rats for plague	... 3,644	4,225
	80,752	92,268

Diphtheria was present as an epidemic during the first seven months of 1936, and 15,340 swabbings were examined as compared with 11,859 in 1935.

The number of tests for toxicity increased from 314 in 1935 to 369 in 1936.

Typhoid Fever.—The continued freedom of the State from a serious outbreak of typhoid fever was reflected in the number of examinations for this disease. It still remains low.

Gonorrhoea.—There has been an increase of 3,562 in the number of smears examined for gonococci, due to the expansion of the venereal diseases clinic for men.

Malaria.—Examinations were made of nine slides for malaria, two of which were positive. In each case the infection was acquired outside the State.

Anthrax.—During the year one shaving brush of a suspected type was examined, but *B. anthracis* was not recovered.

Cultures of pus were also examined from three human beings, one of the cultures proved positive.

Serology.—The number of serological tests carried out in connection with the diagnosis and treatment of venereal diseases shows an increase of 5,773 (34,839 tests were made in 1935 and 40,612 in 1936).

The increase in the attendances at the various Venereal Diseases Clinics was responsible for the rise in the number of serology tests, and smears examined for gonococci.

Milk Samples Submitted by the Milk Board.—There was a considerable increase in the number of milk examinations made during 1936 as compared with 1935. This increase occurred both in the milk samples examined for *Tubercle bacilli* and for *B. abortus* (509 in 1935 and 687 in 1936).

Of the 687 milk samples examined for *Tubercle bacilli*, 12 (1·7 per cent.) were positive; *B. abortus* was present in 82 (12 per cent.) of the 687 samples. It is to be noted that 7 out of the 12 samples in which *Tubercle bacilli* were detected were taken from one vendor.

Post-Operative Tetanus.—Particulars are given on page 179 concerning a further fatal case of post-operative tetanus.

Need for Increase in Laboratory Accommodation and Personnel.—The increasing number of examinations carried out year after year in the Microbiological Laboratory renders it necessary that consideration should be given to the question of additional space and increase of staff.

TABLE showing the Routine Examinations made for the Various Branches of the State Department of Public Health, other Government Departments, Subsidised Hospitals, etc.

	Number of Examinations. Comparative Statement.	
	1935.	1936.
Department of Public Health—		
Head Office Submissions	15,601	20,906
Prince Henry (formerly Coast) Hospital	4,073	3,923
David Berry Hospital, Berry	109	171
Lady Edeline Hospital for Babies	.....	.....
Lidcombe State Hospital and Home	5,169	4,975
Liverpool State Hospital and Home	464	707
Newington State Hospital and Home	431	542
Waterfall Sanatorium	5	12
Medical Officer of Health, Metropolitan District	56	51
,, ,, ,, Hunter River District	79	4
Commonwealth Government	106	312
State Departments—		
Agriculture and Stock Department	.....	.....
Education Department	134	122
Child Welfare	3	4
Government Stores Department	37	22
Milk Board	1,177	1,336
Police Department	48	54
Prisons Department (Long Bay Gaol, etc.)	481	217
Public Works Department	101	6
Railways and Tramways Department	6	1
State Insurance Office	2	1
Water Conservation Commission	.....	1
Hospitals Commission	.....	1
Silicosis Commission	.....	.....
Aboriginal Protection Board	.....	.....
Private Practitioners	18,859	18,897
Public Hospitals and Institutions other than State Hospitals	30,040	35,631
Municipal and Shire Councils	127	147
	77,108	88,043
Total Examinations—		
General	77,108	88,043
Rats for Plague	3,644	4,225
Total	80,752	92,268

IN the following Statement the Routine Work is divided into sections to disclose the purposes for which the various examinations were made.

	Number of Examinations. (Comparative Statement.)			
	1935.		1936.	
A.—*Microbiological Examinations.*				
1. Of materials from diseased persons and animals—				
Actinomycosis	6		5	
Bilharzia	1		.....	
Brucella abortus	6		10	
Diphtheria (swabbings)	11,859		15,340	
,, (toxicity)	354		369	
Dysentery	19		4	
Gonorrhœa (smears and urine)	13,726		17,288	
,, (complement deviation test)	3,421		3,824	
Hæmolytic streptococci	76		62	
Hydatids (sputa, smears, etc.)	20		44	
,, (complement deviation test)	55		58	
Leprosy (human)	5		22	
Malaria	24		9	
Mastitis (bovine)	.....		.....	
Meningitis	109		89	
Syphilis (Wassermann reactions)	16,017		18,687	
,, (Kahn's flocculation test)	15,401		18,101	
,, (spirochætes)	98		88	
Tetanus	6		1	
Tinea	19		26	
Tuberculosis	3,289		2,906	
Typhoid (Widal reactions)	284		266	
,, (urine, fæces)	483		240	
,, (miscellaneous, water, milk, etc.)	19		5	
Unclassified : " No growths " from pus, etc.	1,281		1,212	
Typhus	6		10	
Vincent's Angina	108		62	
Hookworm	.....		1	
Rat Leprosy	.....		3	
		66,692		78,732

Division of Routine Work, etc.—*continued.*

	Number of Examinations. (Comparative Statement.)			
	1935.		1936.	
Brought forward		66,692		78,732
A.—*Microbiological Examinations*—continued.				
2. Examinations for Anthrax—				
Human beings	1		3	
Shaving brushes, etc.	4		1	
Wool	.....		1	
		5		5
3. Of Materials, etc.—				
Chemical closet contents	7		.....	
Disinfectants	44		51	
Feathers	9		10	
Sewage, effluents, etc.	2		1	
Soil	5		5	
Water	182		74	
Water from swimming baths	87		217	
		336		358
4. Examination of Foods for Bacterial Contamination—				
Dried Milk	.....		2	
Milk—				
Milk samples submitted by the Milk Board for examination for tubercle bacilli and B. abortus	509		687	
Milk samples for bacteriological count submitted by the Milk Board	668		649	
Miscellaneous milks for bacterial counts, etc.	8		20	
		1,185		1,358
5. Examinations for Food Poisoning	4		5	
		4		5
B.—*Pathological Examinations.*				
1. Of Animals—				
Mammals	3		2	
Fish	.....		.....	
		3		2
2. Of Body Fluids—				
Blood for full and differential count	1,213		1,136	
,, ,, blood typing	1		.....	
,, —coagulation time	9		11	
Chemical Examinations—				
Blood for sugar	234		239	
,, ,, ,, tolerance	55		45	
,, ,, urea	1,018		748	
,, ,, ,, creatinin	16		26	
Urine for sugar (quantitative)	34		34	
,, ,, urea	477		253	
Test meal specimens	1,085		761	
Calculus	12		27	
Miscellaneous	322		302	
Fæces	89		40	
Urine (general examinations)	1,358		1,024	
		5,923		4,646
3. Of Tissues—				
Malignant tumours	583		587	
Tubercular	29		24	
Other conditions	1,466		1,553	
		2,07		2,164
C.—*Examination of Parasites.*				
Ecto-parasites (fleas, ticks, etc.)	.....		1	
Endo-parasites (round and flat worms)	13		10	
Protozoa	13		29	
Insects (including flies and mosquitoes) & spiders	2		4	
		28		44
D.—*Medico-Legal Examinations.*				
Examination of Exhibits for—				
Blood stains	15		16	
Gonococci	5		.....	
Seminal stains	31		27	
Spermatozoa	20		29	
Other examinations	2		7	
Poison tests	.....		.....	
		73		79
E.—*Examination of Specimens for Preparation of Vaccines.*				
Preparation of Autogenous Vaccines from sputa, urine acne pustules, boils, wounds and other septic conditions	781		650	
		781		650
Total		77,108		88,043

ROUTINE EXAMINATION OF RATS FOR THE PRESENCE OF PLAGUE.

TABLE showing the Number and Species of Rodents Examined in Sydney and Newcastle each month during the year ended 31st December, 1936.

Month.	Sydney.				Newcastle.			
	R.R. Rattus.	*Rattus Norvegicus.*	*M. Musculus.*	Total.	*R.R. Rattus.*	*Rattus Norvegicus.*	*M. Musculus.*	Total.
January	175	23	37	235	16	9	...	25
February	188	43	8	239	3	4	...	7
March.....	214	86	12	312	11	3	...	14
April	148	74	33	255	13	3	...	16
May	233	131	41	405	1	...	...	1
June	223	128	72	423	3	5	...	8
July	225	144	58	427	10	4	...	14
August	150	135	63	348	3	1	...	4
September	279	79	42	400	10	...	...	10
October	419	54	33	506	5	7	...	12
November	281	94	30	405	2	...	...	2
December	113	59	10	182	...	...	...	...
Total	2,648	1,050	439	4,137	77	36	...	113

PART II.

INVESTIGATIONAL WORK.

REPORT* on a further case of Post-operative Tetanus in New South Wales (K. H. Grieve).

In November, 1936, following a report from a country hospital in one of the northern coastal towns, Dr. K. H. Grieve, an officer of the Microbiological Laboratory, made an investigation concerning the case, and reported as follows :—

A.F., aged 51, married, wife of grazier (cattle), was operated upon—*abdominal hysterectomy*—on 29th October, 1936. Fibrosis uteri and metrorrhagia. History of ? diabetes. Sugar in urine prior to operation. *Insulin* given. Daily urine examinations showed sugar in urine until Saturday, 7th November, 1936; no diacetic acid and no acetone. *Previous operations*—nil.

Injury.—No signs or history of recent or remote injury.

Post-operative Course.—Smooth. *Temp.* ranging up to 100·4° F. *Pulse* 70–100. Abdominal wound broke down at lower angle on 6th November, 1936. Blood-stained serum evacuated.

7th November, 1936—ninth day following operation; slight stiffness of neck and jaw muscles noted at 5 a.m. Tetanic spasms noted 7·30 a.m., T. 100·4 F. Pulse 132 to 144. Moribund when seen by me at 11·15 a.m. 8th November, 1936. Died 3·15 p.m. 8th November, 1936, *i.e.*, eleventh day after operation, and thirty-six hours after first tetanic symptom.

Treatment of Tetanus.—Antitetanic *serum* 100,000 *units* intravenously; *morphine Hcl.* grain $\frac{1}{4}$ 4th hourly, and p.r.n. to allay spasm. Avertin 3·8 c.c. in 100 c.c. dilution, given per rectum 10 a.m. 8th November, 1936, which controlled spasm until death at 3·15 p.m.

Post-mortem.—Full post-mortem examination not authorised by Coroner, though suggested. In view of relatives' permission to remove necessary tissues this suggestion was not pressed. At 4·45 p.m., $1\frac{1}{2}$ hours after death—under aseptic conditions—I removed :—

I. *Abdominal Incision*, including skin subcutaneous tissue, rectus sheaths, rectus and peritoneum in an oblong block wide of incision. Placed in autoclaved jar.

II. *Peritoneal Suture Line.*—This line of suture in the floor of the pelvis presented no unusual feature, no ecchymosis, no haematome, no gas formation. Placed in autoclaved jar.

III. *Descending Colon.*—A portion, 5 to 6 in., removed and placed in autoclaved jar.

Catgut.—Two jars and tops were soaked in aqueous iodine 1 per cent. for two hours—washed in sterile water and autoclaved for one hour. In these jars were placed the remaining spools of catgut as used at operation plus the storage solution of each individual container. No samples of *dry unprepared* catgut were available.

Catgut Preparation.—Purchased dry in bulk from *Martin & Co.*, reputed to be "pre-sterilised." Prepared at Casino Memorial Hospital as follows :—

(i) for nine days catgut immersed in "a quantity" of "sterilizing solution" :—
Iodine gr. IV fs.
K.I. gr. IX
K. Iodate gr. l.
Glycerine M XXIV
Aquam ad oz. I.

(ii) *Washed* with three successive quantities of 70 per cent. methylated spirit containing 10 per cent. glycerine.

(iii) *Stored* in methylated spirits 50–70 per cent. containing Iodine 0·1 per cent. to 0·2 per cent. About 5–6 feet of this catgut used at operation.

Iodised silk—boiled and stored in "tincture" iodi was used for skin suture—none left for examination.

Hospital.—Recently-built efficient hospital. Excellent operating *theatre and sterilising room.* Large autoclave working with steam under pressure. No trouble with wounds generally. The *theatre* is tiled, and in hot weather (prevalent) ventilation is secured by means of two large open windows, the openings being covered by fine mesh wire gauze.

Weather.—On day of operation, hot, dry and *dusty* and *windy.*

Sheep.—Have been allowed to graze in the hospital's grounds and in close proximity to hospital's buildings. In *September*, roughly a month prior to this operation, one of the flock of sheep *died of ? tetanus.* Seen by Stock Inspector. The carcase was burnt, but no burning off of area of grass (dry, short, dusty and stubby) upon which sheep grazed. Sheep droppings noticed in paddock and on lawn immediately in front of hospital where sheep were still grazing. Recommended burning off of this area.

The abovementioned specimens are submitted herewith, viz. :—

(1) Autoclaved jar containing abdominal incision.
(2) ,, ,, pelvic peritoneal suture line.
(3) ,, ,, portion of colon.
(4) ,, ,, catgut and storage solution.
(5) ,, ,, catgut and storage solution.

* In the Annual Report for 1933 (p. 111) particulars are given of an investigation of nine fatal cases of post-operative tetanus in New South Wales.

LABORATORY INVESTIGATIONS.

1. *Examination of Post-mortem Tissues.*—

Cultures were made from—

(i) Abdominal incision and surrounding tissues of abdominal wall,

(ii) pelvic peritoneal suture line,

(iii) Descending colon.

Tetanus bacilli were not recovered from any of the cultures.

Guinea pigs were inoculated but did not develop tetanus.

2. *Catgut.*—Five spools of catgut including three solid spools were examined.

It was noticed that on each of the three solid spools, the inner layers of catgut were definitely lighter in colour than the outer layers, suggesting that these inner layers had not been as heavily impregnated with iodine as had the outer layers.

Cultures showed heavy growth on all samples of gut wound on solid spools.

Tetanus bacilli were not recovered from the cultures.

Guinea pig inoculation did not reveal the presence of *B. tetani.*

Sydney David Harold Paisley, Government Printer—1938.